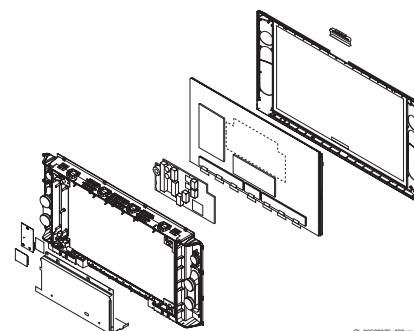


Service Service Service



CL 36532075, 500 4514
201103

Service Manual

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1. Technical Specifications, Connections, and Chassis Overview

Index of this chapter:

1. Technical Specifications
2. Connection Overview
3. Chassis Overview

Note: Figures below can deviate slightly from the actual situation, due to the different set executions.

1.1 Technical Specifications

1.1.1 Vision

Display type	: DV-Plasma, 16:9
Screen size	: 42-inch (106 cm)
Resolution (HxV)	: 852(x3) x 480 pixels
Contrast ratio	: 1200:1
Light output	: 700 cd/m ²
Viewing angle (HxV)	: 160x160 deg.
Tuning system	: PLL
TV Colour systems	: NTSC 3.58
Video playback	: NTSC 3.58, 4.43
	: PAL B/G
	: VGA (640x480)
	: SVGA (800x600)
Channel selections	: 125 presets
	: VHF
	: UHF
	: S-band
	: Hyper-band
Aerial input	: 75 ohm
	: F-type
	: Coax
Dimensions (WxHxD) in mm	: 1215x680x135

1.1.2 Sound

Sound systems	: AV Stereo,
	: BTSC (USA)
Maximum power	: 2 x 15 W _{rms} (int.)

1.1.3 Miscellaneous

Mains voltage	: 95-240 V _{ac}
Mains frequency	: 50/60 Hz
Ambient temperature	: +5 to +40 deg. C
Maximum humidity	: 90 % R.H.
Power consumption	:
- Normal operation	: ≈ 160 W
- Standby	: < 1 W

1.2 Connection Overview

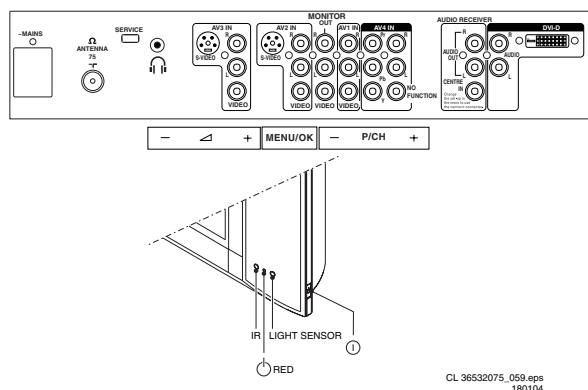


Figure 1-1 Rear/ bottom connections

1.2.1 Aerial In

-F-type	Coax, 75 ohm	
---------	--------------	--

1.2.2 Headphone Out

-Headphone	32 - 600 ohm / 10 mW	
------------	----------------------	--

1.2.3 AV3 in

S-Video In

1 -Ground	Gnd	
2 -Ground	Gnd	
3 -Y	1 V _{pp} /75 ohm	
4 -C	0.3 V _{pp} /75 ohm	

Cinch In

Rd -Audio R	0.5 V _{rms} /10 kohm	
Wh -Audio L	0.5 V _{rms} /10 kohm	
Ye -CVBS	1 V _{pp} /75 ohm	

1.2.4 AV2- in

S-Video In

1 -Ground	Gnd	
2 -Ground	Gnd	
3 -Y	1 V _{pp} /75 ohm	
4 -C	0.3 V _{pp} /75 ohm	

Cinch In

Rd -Audio R	0.5 V _{rms} /10 kohm	
Wh -Audio L	0.5 V _{rms} /10 kohm	
Ye -CVBS	1 V _{pp} /75 ohm	

1.2.5 Monitor out

Cinch Out

Rd -Audio R	0.5 V _{rms} /10 kohm	
Wh -Audio L	0.5 V _{rms} /10 kohm	
Ye -CVBS	1 V _{pp} /75 ohm	

1.2.6 AV1 in

Cinch In

Rd -Audio R	0.5 V _{rms} /10 kohm	
Wh -Audio L	0.5 V _{rms} /10 kohm	
Ye -CVBS	1 V _{pp} /75 ohm	

1.2.7 AV4 in

Cinch In

Rd -Pr	0.7 V _{pp} /75 ohm	
Bu -Pb	0.7 V _{pp} /75 ohm	
Ge -Y	0.7 V _{pp} /75 ohm	

Cinch In

Rd -Audio - R	0.5 V _{rms} / 1 kohm	
Wh -Audio - L	0.5 V _{rms} / 1 kohm	

1.2.8 Audio receiver

Cinch Out

Rd -Audio R	0.5 V _{rms} / 1 kohm	
Wh -Audio L	0.5 V _{rms} / 1 kohm	

Cinch In

Bk -Audio Centre	
------------------	--

1.2.9 DVI

Cinch In

Rd- Audio - R 0.5 V_{rms} / 1 kohm
Wh- Audio - L 0.5 V_{rms} / 1 kohm

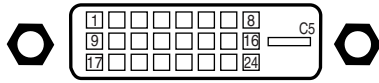
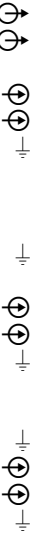


Figure 1-2 DVI connector

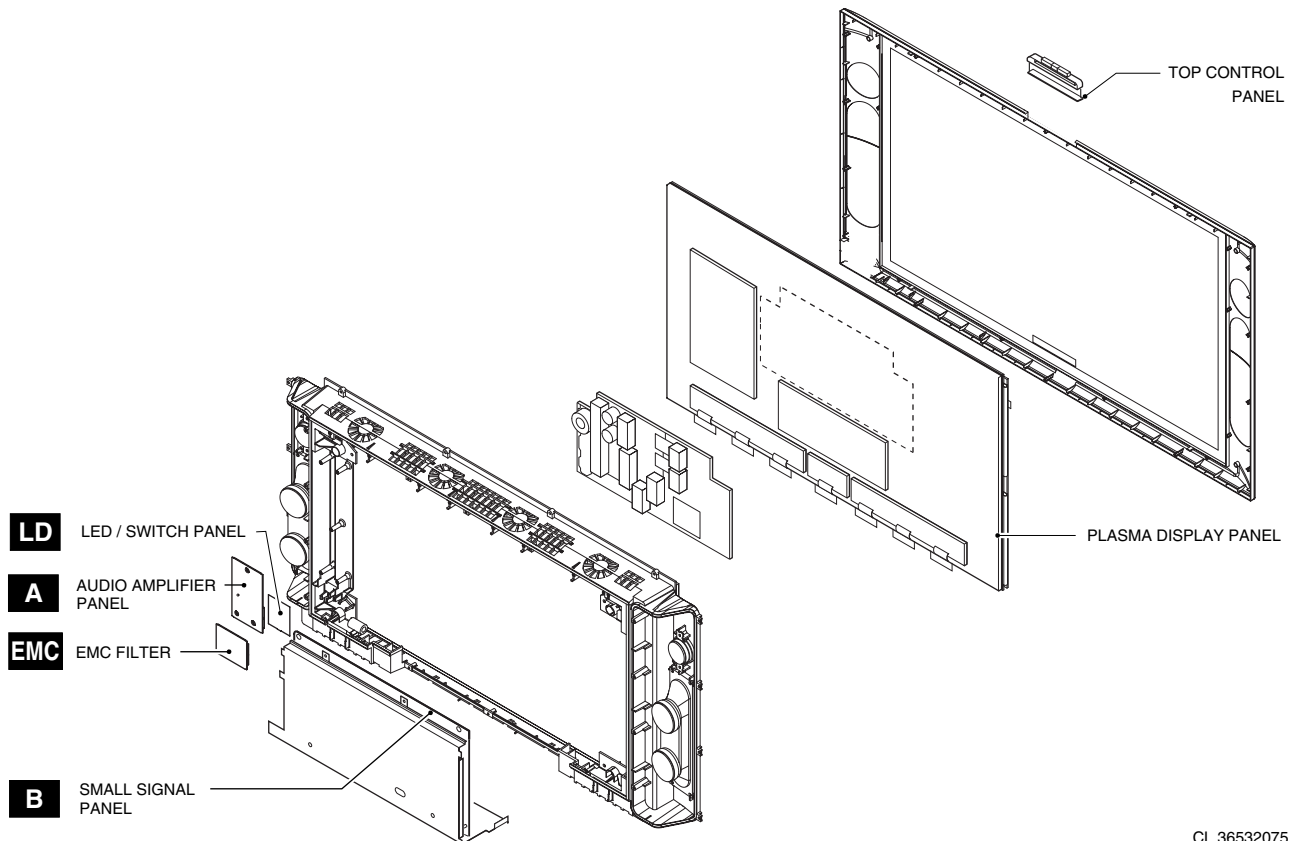
1 - RX2-
2 - RX2+
3 - Ground GND
4 - n.c.
5 - n.c.



6 - SCL_DVI
7 - SDA_DVI
8 - n.c.
9 - RX1-
10 - RX1+
11 - Ground GND
12 - n.c.
13 - n.c.
14 - +5V
15 - Ground GND
16 - +5V Hot Plug
17 - RX0-
18 - RX0+
19 - Ground GND
20 - n.c.
21 - n.c.
22 - Ground GND
23 - RXC+
24 - RXC-
C5 - Ground GND



1.3 Chassis Overview



CL 36532075_057.eps
241103

Figure 1-3 Chassis Overview

2. Safety Instructions, Warnings, and Notes

2.1 Safety Instructions

Safety regulations require that **during** a repair:

- Connect the set to the mains via an isolation transformer (> 800 VA).
- Replace safety components, indicated by the symbol , only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

Safety regulations require that **after** a repair, the set must be returned in its original condition. Pay in particular attention to the following points:

- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the mains lead for external damage.
- Check the strain relief of the mains cord for proper function.
- Check the electrical DC resistance between the mains plug and the secondary side (only for sets which have a mains isolated power supply):
 1. Unplug the mains cord and connect a wire between the two pins of the mains plug.
 2. Set the mains switch to the "on" position (keep the mains cord unplugged!).
 3. Measure the resistance value between the pins of the AC power plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 Mohm and 12 Mohm.
 4. Switch "off" the set, and remove the wire between the two pins of the mains plug.
- Check the cabinet for defects, to avoid touching of any inner parts by the customer.

2.2 Warnings

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD ). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential. Available ESD protection equipment:
 - Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable) 4822 310 10671.
 - Wristband tester 4822 344 13999.
- Be careful during measurements in the high voltage section.
- Never replace modules or other components while the unit is switched "on".
- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

2.3 Notes

2.3.1 General

- In order to prevent damage to ICs and transistors, avoid all high voltage flashovers.
- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD, ). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this potential. Available ESD protection equipment:
 - Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and ground cable) 4822 310 10671.

- Wristband tester 4822 344 13999.
- Never replace modules or other components while the unit is 'on'.
- Measure the voltages and waveforms with regard to the chassis (= tuner) ground () or hot ground () depending on the tested area of circuitry. The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode (see chapter 5) with a color bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz (PAL) or 61.25 MHz (NTSC, channel 3).
- Where necessary, measure the waveforms and voltages with () and without () aerial signal. Measure the voltages in the power supply section both in normal operation () and in standby (). These values are indicated by means of the appropriate symbols.
- The semiconductors indicated in the circuit diagram and in the parts lists, are interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

2.3.2 Schematic Notes

- All resistor values are in ohms and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kohm).
- Resistor values with no multiplier may be indicated with either an "E" or an "R" (e.g. 220E or 220R indicates 220 ohm).
- All capacitor values are expressed in micro Farads ($\mu = \times 10^{-6}$), nano Farads ($n = \times 10^{-9}$), or pico Farads ($p = \times 10^{-12}$).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An "asterisk" (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed in the Electrical Replacement Parts List. Therefore, always check this list when there is any doubt.

2.3.3 Practical Service Precautions

- **It makes sense to avoid exposure to electrical shock.** While some sources are expected to have a possible dangerous impact, others of quite high potential are of limited current and are sometimes held in less regard.
- **Always respect voltages.** While some may not be dangerous in themselves, they can cause unexpected reactions - reactions that are best avoided. Before reaching into a powered TV set, it is best to test the high voltage insulation. It is easy to do, and is a good service precaution.

3. Directions for Use

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Service/Warranty Information 25-27

Help?

If this instruction manual does not give an answer or if Before Calling Service' do not solve your TV problem, you can call your Local Philips Customer or Service Centre. See the supplied World-wide guarantee booklet. Please, have the Model and Product number which you can find at the back of your television set or on the packaging, ready, before calling the Philips helpline. (800-531-0039)

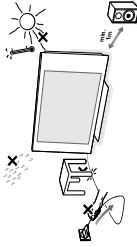
Model: 42PF9936/37
Product No:

End of life directives

Philips is paying a lot of attention to producing environmentally friendly in green focal areas. Your new TV contains materials which can be recycled and reused. At the end of its life specialized companies can dismantle the discarded TV to concentrate the reusable materials and to minimize the amount of materials to be disposed of. Please ensure you dispose of your old TV according to local regulations.

Preparation

Do not insert the power plug in a wall socket before all connections are made.



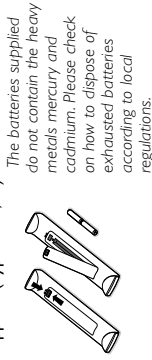
1 Wall mounting instructions

For the wall mounting instructions follow the illustrated steps printed on the separate template. Make sure that the wall mount is being fixed securely enough so that it meets safety standards. The weight of the TV (excl. packaging) is about 87 Lbs. How to mount the supplied stand, see the separate leaflet.

Note: not supplied stands are optional accessories. Consult your dealer.

2 Place or hang the TV wherever you want, but make sure that air can circulate freely through the ventilation slots. Do not install the TV in a confined space such as a book case or a similar unit.

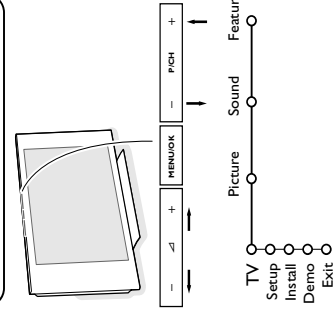
To prevent any unsafe situations, no naked flame sources, such as lighted candles, should be placed on or in the vicinity. Avoid heat, direct sunlight and exposure to rain or water. The equipment shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on it.



3 Turn the TV on: Press the power button

at the right side of the TV.
A green LED and the screen light on.
The green LED blinks every time you press a button on the remote control. When you turn on your set for the first time, the menu language automatically appears on the screen. Alternately the explanation appears in different languages.

Buttons on top of the TV



Should your remote be lost or broken you can still change some of the basic settings with the buttons on top of your TV.

Press:
• the - or + button to adjust the volume;
• the -P/CH+ buttons to select the TV channels or sources.

The MENU/OK button can be used to summon the main menu without the remote control.

Use:
• the - and + buttons and the P/CH- and P/CH+ buttons to select menu items in the directions as shown;
• the MENU/OK button to confirm your selection.

Note:
When activated via the MENU/OK button on top of the TV, only Exit lets you remove the menu.
Navigate to Exit and press the MENU/OK button.

Use of the remote control RC4305

Note: For most buttons pressing a button once will activate the function. Pressing a second time will de-activate it. When a button enables multiple options, a small list will be shown. Press repeatedly to select the next item in the list. The list will be removed automatically after 4 seconds or press **OK** to remove immediately.

CBL VCR DVD SAT AMP
Press this button repeatedly to select one of the system modes in which the remote control can be used. If no action is being undertaken within 2 seconds, the remote control returns to TV mode. After an action in the selected system mode the remote control will remain in this mode for 60 seconds and will then return to TV mode.

Backlighting button

Press the **Select** button more than 2 seconds. The backlighting of the buttons **CH**, **OK** and the digit buttons stays on for 5 seconds after pressing the button.

no function

OK Press this button to activate your choice or to confirm when in the menus.

Freeze

To freeze the picture. Dependent on the input signal, the function may not be possible.

Volume

Press + or - to adjust the volume.

0/9 Digit buttons

To select a TV channel. For a two digit program number, enter the second digit before the dash disappears. To switch immediately to a selected one digit TV channel, keep the digit button pressed a bit longer.

Power

Press to turn on/off the TV. The TV is never powered off completely unless it is physically unplugged.

Audio and Video equipment buttons

See p. 19.

Time display

Sound mode

Incredible surround

With stereo transmission, and when Incredible surround is selected, it seems as though the loudspeakers are spread further apart from one another.

Virtual Dolby surround

Optimal with Dolby surround signals. Enables you to experience the effect of Dolby surround Pro Logic, reproducing a rear sound effect. See Sound menu, 3D effect, p. 10.

Note: You can make the same selection in the Sound menu, Sound mode, p. 10.

Alternate audio

When you tune a channel where SAP (Second Audio Program) is available, you can toggle between **Main** and **SAP**. If not available, only **Main** can be selected.

Closed Caption

On/Off/On during mute see p. 10

Menu Main menu on/off see p. 8.

Mute

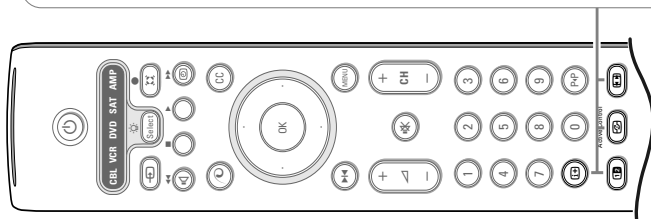
Interrupt the sound or restore it.

Channel selection

To browse through the TV channels or sources stored.

Previous TV channel

Press to display the previously selected TV channel.



Display information

Press to display (when available) information about the selected TV channel and program.

Menu/Remote control info

When a menu is on screen, press **Menu** to display info on the selected menu item. While the menu info is displayed, press any button to display remote control info. The normal function of the button is not executed.

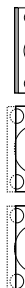
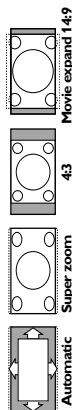
no function

Active control see p. 9.

Picture format

Press this button to summon a list of available display formats for showing video images in the traditional 4:3 proportions.

Press this button repeatedly or press the cursor up/down to select another picture format: Automatic, Super zoom, 4:3, Movie expand 14:9, Movie expand 16:9, 16:9 subtitle or Wide screen.



Movie expand 16:9 Automatic makes the picture fill the screen as much as possible. Super zoom removes the black bars on the sides of 4:3 programs with minimal distortion.

When in Movie expand 14:9, Movie expand 16:9 or Super zoom picture format, you can make subtitles visible with the cursor up/down.

To use the menus

1 Press the **MENU** button on the remote control to summon the main menu. At any moment you can exit the menu by pressing the **MENU** button again.

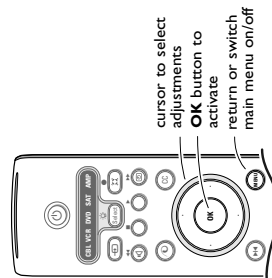
2 Use the cursor in the up/down direction to select the TV, **Settings**, **Demo** or **Install** menu.

Note: Sometimes not all the menu items are visible on the screen (indicated by a cluster of blue balls). Press the cursor down to reveal all items.

3 Use the cursor in the left/right direction to select the menu item.

4 Use the cursor up/down again to select the control you want to select or to adjust.

Note: Items temporary not available or not relevant are displayed in a light grey color and cannot be selected.



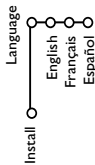
Installation

The installation menu contains the following items:

Language Autoprogram

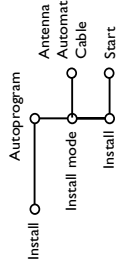


Select the menu language



- 1 Press the **MENU** button on the remote control.
- 2 Use the cursor down to select **Install**.
- 3 Use the cursor right to select **Language**. Follow the instructions on screen.
- 4 Use the cursor up/down to select your preferred language and press the **OK** button to confirm your selection.
- 5 Proceed with the **Install** menu.

Store TV channels



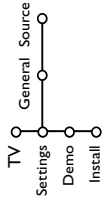
- 1 Select **Autoprogram** in the Install menu.
 - 2 Press the cursor down to select **Install mode**.
 - 3 Press the cursor right.
- Note: It is recommended to keep the predefined **Automatic** way of autoprogramming. In case of difficulties in autoprogramming with the automatic method, choose for Antenna or Cable whether antenna or cable signals are present.*
- When **Automatic** is selected, the TV will automatically detect whether or not cable signal input is present.
- When **Antenna** is selected, the TV will detect antenna signals and will search for all antenna TV channels available in your local area.
- When **Cable** is selected, the TV will detect cable signals and will search for all cable TV channels available in your local area.
- 4 Press the cursor down to select **Install**.
Note: All channels must be unlocked in order to autoprogram. If requested, enter your PIN code to unlock all channels. (See Channels in the TV menu, p. 11.)
 - 5 Press the cursor right.
 - 6 The message **Searching** appears and the progress of autoprogramming is displayed.
- When Autoprogramming is complete, the puck navigates to Stop. A message appears confirming the completion together with the total number of channels found.
- Note: when you navigate to Stop before autoprogramming is complete, you are given the option to continue.*

Available channels:
- with cable: max. from 1 to 125
- off air: max. from 2 to 69

Note: In case a particular channel is too weak for the autoprogramming to identify, after installation is complete, you should tune to that channel by using the digit buttons on the remote control. If the channel is not acquired, a message will appear that the channel is not available.

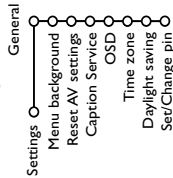
Settings menu

The **General** menu allows you to change settings that will typically be accessed only occasionally.
The **Source** menu allows you to select a source.



General

This menu allows you to change various settings that are presumably adjusted less frequently than most other settings.



- 1 Select **Caption service** with the cursor down.
- 2 Press the cursor right.
- 3 Select the desired **Caption Service**:
 - **CC 1, 2, 3 or 4**
Dialogue (and descriptions) for the action on the captioned TV program shows on screen. Usually CC 1 is the most used. CC 2 may be used for alternate languages if they are being transmitted.
 - **T 1, 2, 3 or 4**
Often used for channel guide, schedules, bulletin board information for Closed Caption programs, news, weather informations or stock market reports.
Not all Caption Services are necessarily being used by a TV channel during the transmission of a Closed Caption program.
- 4 See **Closed Captions in the TV Features menu**, see p. 10, to turn the **Caption service On or Off**.
Note: This television provides display of television closed captioning conforming with the EIA-608 standard and in accordance with Sections 1.5.1.19 of the FCC rules.

Menu background

- 1 Select **Menu Background** with the cursor down and press the cursor right.
- 3 Select **On or Off** to turn the menu background on or off.

Reset AV settings

This function allows you to reset most of the picture and sound settings to their predefined factory states.

- 1 Select **Reset AV settings** with the cursor down.
- 2 Press **OK** to erase settings and reset them to their default values.

Caption Service

Closed Captioning allows you to read the voice content of television programs on the TV screen. Designed to help the hearing impaired, this feature uses on-screen 'text boxes' to show dialogue and conversations while the TV program is in progress. Captions will appear on the screen during captioned broadcasts.

Note: The captions do not always use correct spelling and grammar. Not all TV programs and product commercials are made for broadcast with Closed Caption information included. Refer to your area's TV program listings for the TV channels and times of Closed Caption shows. The captioned programs are usually noted in the TV listings with service marks such as 'CC'.

OSD (On Screen Display)

- 1 Select **OSD** with the cursor down.
- 2 Press the cursor right to select **Normal** or **Minimum**.
Normal to activate the continuous display of the channel number and extended display of TV channel and channel information on screen.
Minimum to activate the display of reduced channel information.
See **Use of the Remote Control**, p. 4, **Display** information.
Note: When Closed Captions is switched on, see Features, p. 10, continuous display of the channel number is not possible

Demo

TV

Settings

Demo

Install

Auto demo

.....

Dealer demo - Light sensor

- 3D Y/C Comb filter

If **Auto demo** has been selected the demo will automatically present all the features sequentially in a loop. Press one of the cursor buttons to stop the Auto demo.

If one of the features has been selected, this particular feature demo will run one time only, until activated again, and the Demo menu will reappear.

Light sensor and 3D Y/C Comb filter On or Off

Select **Light sensor** and **3D Y/C Comb filter On** or **Off** to really see the difference in picture quality.

In Dealer Demo mode it is possible to change channels with **- CH +** and to adjust the volume.

Note: the Dealer Demo is not part of the automatic sequence and can only be activated separately.

TV menu

Press the **MENU** button on the remote control to summon the main menu.

Note: Dependent on the input signal, one or more menu items may not be selectable.

Press the  button on the remote control to get information about the selected menu item.

Set/Change PIN

1 Select **Set** or **Change PIN** with the cursor down.

2 If no PIN-code exists yet, the menu item is set to **Set PIN**. Follow the instructions on screen. If a PIN-code has previously been entered, the menu item is set to **Change PIN**. Follow the instructions on screen.

All number combinations from 0000 to 9999 are valid numbers.

3 The General menu reappears with a message confirming that the PIN has been created.

Important: You have forgotten your PIN !

1 Select **Change PIN** in the General menu and press **OK**.

2 Press the cursor right to enter the overriding PIN-code 0-7-1-1.

3 Press the cursor again and enter a new personal 4-digit PIN code. The previous code is erased and the new PIN-code is stored.

Time zone

This function allows you to select your local time zone. Broadcasted time information will correct the clock display for your local time.

1 Select **Time zone** with the cursor down.

2 Press the cursor right to select your local time zone.

Daylight saving

Daylight saving time is automatically set by specially broadcasted signals. This menu item allows you to disable the automatic setting of daylight saving time. This is useful if you live in an area or state where daylight saving is not applied, but you receive channels from other areas where daylight saving signals are broadcasted.

1 Select **Daylight saving** with the cursor down.

2 Press the cursor right to select **Automatic** for automatic clock correction for daylight saving time, based on specially broadcasted signals.

3 Select **Off** to disable automatic clock correction based on the specially broadcasted signals.

Picture menu

TV

Picture

Sound

Features

Channels

Auto picture

Contrast

Brightness

Color

Sharpness

Color temperature

Dynamic contrast

DNR

Color enhancement

Tint

Picture format

1 Press the cursor right to select **Picture**.

2 Select the menu items in the Picture menu with the cursor up/down.

3 Adjust the settings with the cursor left/right or enter the list of submenu items with the cursor right. Select a submenu item with the cursor up/down.

Note: To remove the menu background before adjusting the picture settings, see Select TV setup, General, p. 6.

Auto picture

Select **Auto picture** to display a list of predefined picture settings, each corresponding with specific factory settings.

Personal refers to the personal preference settings of picture in the picture menu.

Note:
Dynamic Contrast, DNR, Color enhancement, Tint and Picture format are not available for HD sources.

8

Source

Settings

Source

AV1

AV2

AV3

YPbPr

Center input

Center in volume

1 Select **Source** with the cursor right.

2 Press the cursor down to select one of the external AV inputs.

3 Press the cursor right to enter the list of types of devices attached to the selected input.

4 Select the accessory device with the cursor up/down. Once you have named the source, e.g. VCR, this source will automatically be selected when your remote control is in VCR mode, see p. 3, and when you press the  button on the remote control.

5 Press the **MENU** button on the remote control to turn off all menus on screen.

6 Press the  button on the remote control. The Source Select menu appears in which you may select a source or peripheral connected to be displayed on screen.

Center input - Center in volume

When you have connected a multichannel surround receiver to the TV, the loudspeakers of the monitor can act as center speaker, making a separate center speaker unnecessary.

Select Center input On.

When having selected **On** you can adjust the Center in volume with the cursor left/right to correct volume level differences of the external audio receiver and speakers.

7

TV

Sound

Auto sound

Equalizer

Volume

Balance

Headphone volume

Sound mode

Alt audio

(Mono/Stereo)

3D surround effect

Audio only

AVL

Delta volume

1 Press the cursor right to select **Sound**.

2 Select the menu items in the Sound menu with the cursor up/down and adjust the settings with the cursor left/right. Remember, control settings are at normal mid-range levels when the bar scale is centered.

Auto sound

Select Auto sound to display a list of predefined sound settings, each corresponding with specific factory settings of Treble and Bass.

Press the cursor right to enter the list.

Press the cursor up/down to select a predefined sound setting.

Personal refers to the personal preference settings of sound in the Sound menu.

Note: the moment you are in a predefined Auto sound setting and you modify a setting in the Sound menu, all values of the menu will overwrite the previously made personal setting.

TV

Features

Closed Captions

Sleep timer

On timer

Zoom

1 Press the cursor right to select **Features**.

2 Select the menu items with the cursor up/down and adjust the settings with the cursor left/right.

Use the on-screen Menu-Info  for more information about the menu items.

Dynamic contrast

Automatically makes the contrast in the darker and the brighter picture areas more noticeable as the image on the screen changes.

Normally, select **Medium**. It may be preferred to select **Minimum**, **Maximum** or **Off**.

1 Press the cursor right to enter the list.

2 Select one of the settings with the cursor up/down.

3 Press the cursor left to return to the picture menu.

DNR (Digital Noise Reduction)

Automatically filters out and reduces the image noise and improves picture quality when receiving weak video signals.

1 Press the cursor right to enter the list.

2 Select **Off**, **Minimum**, **Medium** or **Maximum** according to the image noise.

3 Press the cursor left to return to the picture menu.

Color enhancement

When activated, this feature automatically controls green enhancement and blue stretch. It makes the colors more vivid.

1 Press the cursor right.

2 Select **On** or **Off** in order to activate/de-activate Color enhancement with the cursor right.

Tint

Allows you to select the color mix (hue) of the picture.

Picture format

This menu item performs the same as the  button on the Remote Control. See Use of the Remote Control, p. 4.

Active Control

The TV continuously measures and corrects all incoming signals in order to provide the best picture possible.

1 Press the  button on the remote control.

2 The Active Control menu appears.

3 Press the cursor up/down to select the Active Control values **Off**, **Minimum**, **Medium** (recommended) or **Maximum**.

The picture settings are being optimized continuously and automatically which is displayed by bars. The menu items can not be selected.

4 Press the cursor right to select **Auto Picture**.

5 Press the cursor up/down to select one of the predefined picture settings.

6 Press the cursor right to select **Active Display**.

7 Press the cursor up/down to select **Show bars**, one of the Dual screen demos or **Off**.

When you select Dynamic contrast or Digital Noise Reduction, the TV screen is divided into two parts: in the left part the selected picture quality setting is switched off; in the right part it is switched on.

Note: Dependent on the input signal, one or more Dual screen demos may not be selectable.

8 Press the  button again to switch off the Active Control menu.

Closed Captions

See also Caption Service, Settings menu, General, p. 6.

1 Select **Closed Captions** with the cursor down.

2 Press the cursor right.

3 Select **On**, **Off** or **On during mute**

When **On** is selected, the TV will display the currently display Caption Service, assuming that the service is available in the broadcast.

When **Off** is selected, the TV will not display Closed Captions information.

When **On during Mute** is selected, the TV will display the currently selected Caption Service when the mute function is active.

When the mute function is not active, the TV will not display Closed Captions informations.

Sleep timer

With the Sleep timer function you can set a time period after which the TV will turn itself off.

1 Select **Sleep timer** with the cursor down.

2 Press the cursor right to set the time

The cursor runs from 0 up to 180 mins (in 5-min increments). When set to 0, the sleep timer is turned off.

One minute before the sleep timer expires, a message appears that the TV will turn off in 60 seconds or you may cancel the sleep timer by pressing the **OK** button. You can always turn off your TV earlier or change the set time.

10

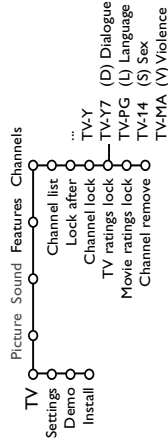
9

On timer

Note: The On timer function is only available if time information is available via the local PBS channel.

- 1 Select **On timer** with the cursor down.
- 2 Press the cursor right and select **On** or **Off** to set the On timer. On or Off.
- 3 When you have selected **On** press the cursor right.
- 4 Select the TV channel or external source you want the On timer to activate with the cursor up/down.
- 5 Press the cursor right to select the day you would like the On timer to become active. Select **Daily** to set the On timer for daily operation on the selected TV channel or source.
- 6 Press the cursor right to select **AM** or **PM**.
- 7 Press the cursor right to enter the time with the digit buttons or with the cursor up/down, left/right.
- 8 Press the **OK** button to confirm.
- 9 Press the **MENU** button to turn off all menus on screen.

Channels menu



- 1 Press the cursor right to select **Channels**.
- 2 Select the menu items with the cursor up/down and adjust the settings with the cursor left/right.

Use the on-screen Menu-Info  for more information about the menu items.

TV Ratings Lock

Your TV is equipped with a V-chip. This allows you to control access to individual programs based on their movie and TV ratings. All settings apply to all AV inputs, except AV3 and YpbPr. The program content advisory data are sent by the broadcaster or program provider.

Zoom

Note: Dependent on the input signal, Zoom may not be selectable.

- 1 Select **Zoom** with the cursor down and press the **OK** button.
- 2 Press the **OK** button to select one of the zoom magnifications (x1, x4, x9, x16).
- 3 Additionally you can shift the selected zoom window over the screen with the cursor buttons up/down, left/right.
- 4 Press the **MENU** button to turn off the zoom function.

Each ratings item has a box-graphic in front of it to indicate whether or not programs carrying that rating are currently locked:

- a yellow-colored box: all items in the contents-based list are locked as well;
- a grey-colored box: the item is unselected;
- a half grey, half yellow-colored box: some content-based ratings are selected/unselected.

When **All** has been selected, all items in the age-based and in the contents-based lists are locked. If, while **All** is selected, any other item, either an age-based or content-based item, is unselected, then **All** is automatically unselected.

None is the selection for items that either have no rating information or have a rating of None. Both will be locked.

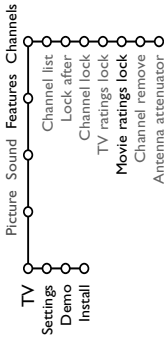
When an item on the age-based list is selected, all items below that item of the same group are locked as well.

When you select a content-based rating, all identical content-based ratings in the younger age-based categories are also selected.

- TV-Y** appropriate for children of all ages with themes and elements suitable for children aged 2-6
- TV-Y7** programs designed for children age 7 and older
- TV-Y7-FV** programs include fantasy violence more intense than other programs in the TV-Y7 category
- TV-G** programs suitable for all ages. These programs contain little or no violence, no strong language and little or no sexual dialogue or situations
- TV-PG** programs contain elements that some parents may find unsuitable for younger children and which may need parental guidance. The program may contain moderate violence, sexual dialogue and/or situations and some strong language.
- TV-14** programs contain elements that may not be suitable for children under 14 years of age. These programs include one or more of the following: intense violence, intense sexual situations, suggestive dialogue and strong language.
- TV-MA** programs are designed to be viewed by adults and may be unsuitable for children under the age of 17. These programs may contain graphic violence, explicit sexual activity and/or crude or indecent language.

Age-based Rating	Content-based Rating
All	none
None	none
TV-Y	none
TV-Y7	(FV) Fantasy Violence
TV-G	none
TV-PG	(D) Dialog (L) Language (S) Sex (V) Violence
TV-14	(D) Dialog (L) Language (S) Sex (V) Violence
TV-MA	(L) Language (S) Sex (V) Violence

Movie Ratings Lock



This function allows you to control access to individual movies based on their MPAA ratings (Motion Picture Association of America).

- 1 Select **Movie ratings lock** with the cursor down. A list appears, showing all valid MPAA content ratings.
- 2 Press the cursor right to enter the list.
- 3 Select a movie rating with the cursor up/down.
- 4 Press **OK** to activate/de-activate the selected rating. You are asked to enter your code. (See Set/Change PIN, p. 7.) If the code is correct, the Movie ratings lock menu reappears.

Each rating item has a box-graphic in front of it to indicate whether or not programs carrying that rating are currently locked:

- a yellow-colored box: movies with this rating are locked;
- a blue-colored box: movies with this rating are unlocked.

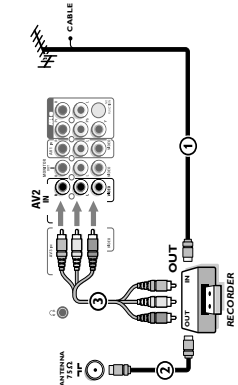
Connect Accessory Devices

There is a wide range of audio and video devices that can be connected to your TV. The following connection diagrams show you how to connect them to the TV.

AV1 IN can handle **CVBS**; **AV2 IN** **CVBS** and **Y/C**; **AV3 IN** **CVBS** and **Y/C**; and **AV4 IN** **YPbPr** 480i and 480p, **YPbPr** 576i and 576p, **YPbPr** 1080i, **DVI** VGA, **SVGA**, **480p**, **576p**, **1080i**.

Recorder (VCR-DVD+RW)

Note: Do not place your recorder too close to the screen as some recorders may be susceptible to signals from the display. Keep a minimum distance of 20" from the screen.

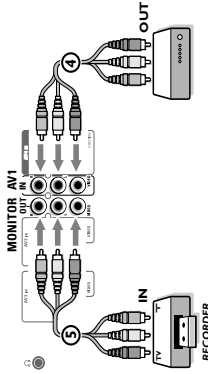


- 1 Connect the RF Antenna or Cable TV cable (also possible via an optional two-way signal splitter and/or Cable TV converter box) ① to the **RF IN** socket of your recorder.
- 2 Connect another RF cable ② from the output **OUT** of your recorder to the TV's input 75 Ω **T** jack.
- 3 Better playback quality can be obtained if you also connect the Video, Audio Left and Right (only for stereo devices) AV cables ③ to the **VIDEO**, **AUDIO L** and **R** input jacks of **AV2 IN**.

If your recorder has an **S-VHS** video jack:

For improved picture quality, connect an S-video cable with the **S-VIDEO** input instead of connecting the recorder to the **VIDEO** jack of **AV2 IN**. S-Video does not provide audio, so audio cables must still be connected to provide sound.

Recorder and other A/V devices



Recorder

- 1 Connect your recorder as described above ①.
- 2 The **MONITOR OUT** connectors can be used for daisy chaining or to record programs from your TV ②. See Record with your recorder, p. 19.

Other AV devices

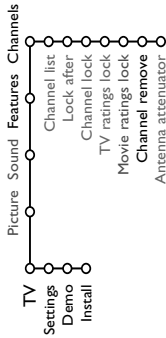
- 3 Connect the Video, Audio left and Audio right (only for stereo devices) cables to the **VIDEO**, **AUDIO L** and **R** input jacks of **AV1** ③.

Note: in case of mono equipment, only the left loudspeaker reproduces sound. Use a mono to stereo adapter (not supplied) for sound reproduction via all internal loudspeakers.

This feature provides the ability to remove a channel number from the channel list.

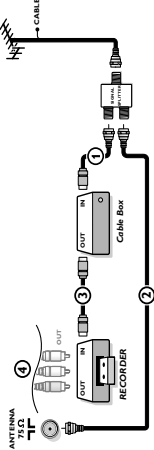
- 1 Select **Channel remove** with the cursor down.
- 2 Press the cursor right to enter a list with all stored channel numbers.
- 3 Select the channel you want to remove with the cursor down.
- 4 Press **OK**.
- 5 Repeat to remove other channels.

Channel remove



Recorder and Cable Box with RDF output

- 1 Use an optional signal splitter.
- 2 Connect one of the cable TV signal splitter outputs ① to the cable box's IN jack.
- 3 Connect the other cable TV signal splitter output ② to the 75 Ω Γ plug on the back of the TV.
- 4 Connect the cable box's OUT jack ③ to the recorder's RF IN socket.
- 5 Connect the Video, Audio Left and Right (only for stereo sound) AV cables ④ to the VIDEO, AUDIO L and R input AV2 IN jacks on the TV.

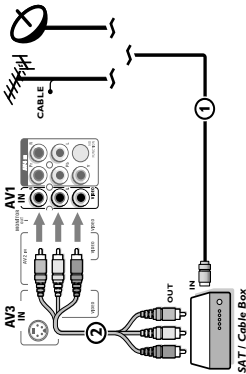


Satellite Receiver / Cable Box with AV outputs

- 1 Connect the satellite antenna cable or the Cable TV cable ① to the satellite receiver's or cable box's IN jack.
- 2 To hear stereo sound on your TV, connect the Video, Audio left and right AV cables ② to the VIDEO, LAUDIO and R AUDIO input jacks of AV1 IN or AV3 IN.

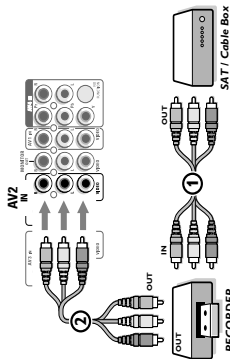
If your satellite receiver or cable box has an S-Video jack:

For improved picture quality, connect an S-Video cable to the S-VIDEO input of AV3 IN instead of connecting the satellite receiver or cable box to the VIDEO jack.
Connect the audio cables to the device's AUDIO L and R jacks and to the L AUDIO and RAUDIO AV3 jacks on the TV.



Recorder and Satellite Receiver / Cable Box with AV outputs

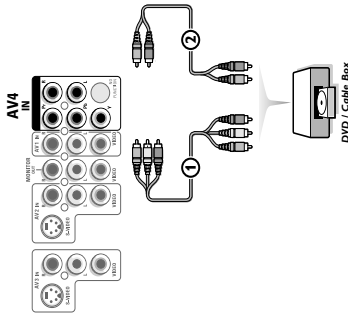
- 1 Connect your satellite receiver or cable box as described above.
- 2 Connect your recorder as described on the previous page.
- 3 Connect the AV cables ① to the satellite receiver's or cable box's AV OUT jacks and to the recorder's AV IN jacks.
- 4 Connect the recorder's AV OUT jacks ② to the TV's AV2 IN jacks.



DVD Player or other accessory digital source devices

Devices with AV connectors only

- 1 Connect the video cables to the device's AV OUT jacks and to the TV's AV1, AV2 or AV3 IN jacks.
- 2 Connect the audio cables to the device's AUDIO L and R jacks and to the LAUDIO and RAUDIO AV1, AV2 or AV3 jacks on the TV. (According to where you connected the video cables, to AV1, AV2 or AV3.)



Devices with an S-Video connector

- 1 Connect an S-Video cable to the AV2 or AV3 S-VIDEO input.
Note: When using the S-VIDEO connector do not connect any device to the AV2 or AV3 VIDEO input.
- 2 Connect the audio cables to the device's AUDIO L and R jacks and to the LAUDIO and RAUDIO AV2 or AV3 jacks on the TV. (According to where you connected the S-VIDEO cable, to AV2 or AV3.)

Devices with Component Video Output Connectors (DVD, Set Top Box,...)

- 1 Connect the cables of your YPbPr equipment ① to the YPbPr input sockets of AV4 IN on the TV.
- 2 Connect the Audio left and right (only for stereo devices) cables ② to the AUDIO L and R input of AV4.

Note: To center the picture, use the cursor left/right.

Devices with Progressive scan output (e.a. a digital Set Top box, a video game console or a Progressive scan DVD player (480p or 1080i))

Connect the device with 2Fb YPbPr output to the YPbPr jacks of AV4 and to the L and RAUDIO jacks of AV4.

Notes

- The labels for the component video sockets may differ depending on the DVD player. Although the abbreviations may vary, the letters B and R stand for the blue and red component signals, respectively, and Y indicates the luminance signal. Refer to the DVD player's instructions for use for definitions and connection details.
- This television is designed to accept high definition signal standards 1080i and 480p as specified by the Electronic Industries Association standard EIA770.3.
- Digital devices from different manufacturers have the possibility of differing output standards which may cause difficulties for the television to properly display.

Warning: in case you notice scrolling images, wrong colors or no color, or even combinations of these on your screen, check if the connections are done in the correct way or move your digital device further away from your TV.

DVI connector (AV5)

The DVI IN connector allows
- the following TV and monitor display modes:

EDTV 640/720 x 480p
720 x 576p
HDTV 1920 x 1080i
VGA 640 x 480 60 Hz
SVGA 800 x 600 60 Hz

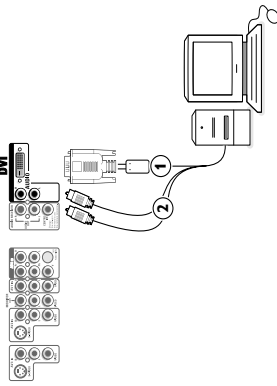
- uncompressed HD content
- encrypted or non encrypted signals.

Note: Only Single Digital Link DVI is supported.

- 1 Connect the digital DVI output of your HD device (e.g. PC, DVD player, Set Top Box...) to the DVI IN connector of your TV.
- 2 Connect the audio cable ② of your HD device (if audio is present) to the AUDIO inputs of your HD device and to the AUDIO R (right) and L (left) inputs next to the DVI IN connector.

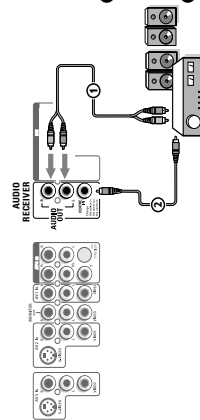
Notes:

- Proper working is only guaranteed with DVI compliant consumer products.
- Digital devices from different manufacturers have the possibility of differing output standards which may cause difficulties for the television to properly display;
- If the set is cold, there may be a small "flicker" when the set is turned on, this is normal, there is nothing wrong with the set.
- To center the picture, use the cursor left/right.



DVI is a specific digital input allowing encrypted transmission of uncompressed HD content. DVI includes HDCP (high-bandwidth digital content protection), which is supported by Hollywood, satellite providers, and most of the consumer electronics industry. DVI is gaining momentum and quickly becoming an industry standard for the consumers to view high-definition material while keeping content protected.

Multi channel Surround receiver



- 1 Connect the audio cable to the multi channel Surround receiver and to AUDIO OUT L and R above the CENTER IN connector of your TV.
 1. Note: turn off the TV and your surround receiver before connecting them. Set the Surround receiver's volume to minimum.
- 2 If you want the loudspeakers of your monitor to act as center speaker, also connect an audiocable to the multi channel Surround receiver and to the CENTER IN of your TV ②.
- 3 Select Center Input On in the Source menu. See p. 7.

The loudspeakers of the TV will now only produce center sound, the loudspeakers connected to the audio receiver will produce Surround Sound. The volume has to be controlled via the multi channel Surround receiver.

Note: No sound will be heard when a TV channel or external source is blocked via the Channel Lock menu (see TV Channels menu, p. 11).

Headphone

- 1 Insert the plug into the headphone socket ① as shown.
- 2 Press **OK** on the remote control to switch off the internal loudspeakers of the TV.
The headphone impedance must be between 8 and 4000 Ohm. The headphone socket has a 3.5 mm jack.
In the Sound menu select **Headphone volume** to adjust the headphone volume.



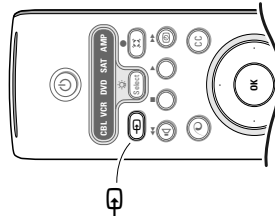
To select connected devices

- 1 Press the **Source** button repeatedly or select **SOURCE** in the Settings menu (see p. 7) to select **AV1, AV2, AV3, AV4, DVI** or **TV channels**, according to where you connected your devices.
- 2 Press the cursor up/down.
- 3 Press **OK**.

Remark: Most equipment (decoder, video recorder) carries out the switching itself. This is however never the case with a computer connected to the DVI input.

If you want to change to TV channels?

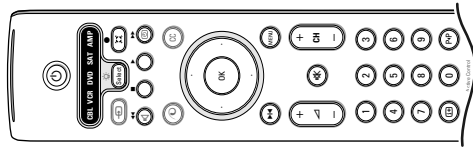
Enter the channel number of the TV channel which you want to watch with the digit buttons.



Audio- and video equipment buttons

Most of the audio and video equipment from our range of products can be operated with the remote control of your TV.

Press one of the buttons after you pressed the **Select** button repeatedly according to the equipment you want to operate with this remote control. See Use of the remote control, p. 3.



- to switch to standby (**VCR**)
- for pause (**DVD, CD**)
- for record, search down (**VCR, CD**); for stop, search up (**DVD/AMP**)
- for play, for fast forward (**VCR, CD**); search up (**DVD/AMP**)
- display information
- MENU** to switch the menu on or off
- **CH +** for chapter, channel, track selection

Notes:

- If no action is being undertaken within 60 seconds, the remote control returns to TV mode.
- After an action in the selected system mode, the remote control will remain in this mode for 60 seconds and will then return to TV mode or press the **Select** button to return to TV mode immediately.

Record with your recorder

To record S-VHS quality, connect an S-VHS peripheral directly to the recorder.

Record a TV program

You can record a TV program using your recorders tuner without affecting your TV.

- 1 Select the channel number on your recorder;
- 2 Set your recorder to record. See the handbook for your recorder.

Switching channel numbers on your TV does not disturb recording!

Record a recorder from MONITOR OUT

You can record a program on your recorder from the TV tuner via **MONITOR OUT**.

- 1 Switch on the device.
- 2 Select the correct channel on your TV and the correct input on your recorder.
- 3 Set your recorder to record. You record the tuner channel of the TV, even when you switch to an AV input using the **CD** button on the remote control.

Do not switch channels or turn off your TV when you are recording through **MONITOR OUT**.

Note: When a TV channel or AV source is blocked because of a rating set via the Channels menu (see p. 11), also the record output picture and sound are muted.

Setting the remote control to work accessory devices

Your remote control is set to work your TV and many infrared remote (IR) control VCRs, Cable TV Converter Boxes, DVD players, Satellite Receivers, etc.

Press the **Select** button repeatedly to select **CBL, VCR, DVD, SAT** or **AMP** according to the accessory device you want to operate with this remote control. See Use of the Remote control, p. 3. Press the **OK** button.

If the function buttons on the remote control also work the selected accessory device, then the remote is ready and no further steps are needed.

If the function buttons do not work with the selected accessory device, according to the device(s) you own, you may make your remote control ready for them by a direct entry code. Proceed as following.

Code setup

- 1 Press the **Select** and **OK** buttons at the same time, then release.
- 2 **NOTE:** When inputting the digits as described below, you must not allow more than 20 seconds to pass between the input of each digit or you will need to return to step 1 and begin the programming process again. Input the appropriate digit provided below for the type of accessory device you want to operate:
 - 1 Cable (CBL)
 - 2 VCR
 - 3 DVD
 - 4 Satellite (SAT)
 - 5 Amplifier (AMP).
- 3 Within 60 seconds from the time the blinking starts, point the remote toward the accessory device and press the **OK** button. If the device does not respond to the **OK** command, follow the steps for programming the remote again using a different setup code for the type and brand of accessory device you wish to operate. Refer again to the code list on pages 21-22. If no more codes are listed for the type and brand of accessory device, the remote likely will not operate your particular model of accessory device.

Notes:

- Your TV remote is not necessarily capable of being programmed to operate all models of the brands of accessory devices listed on pages 21-22. You may want to try the programming process again. Try using the number(s) that are listed for your type and brand of device to be sure you did not make a mistake in inputting the digits during your first attempt at programming.
- If the remote control is in one of the accessory modes (a mode light is flashing) — CBL, VCR, DVD, SAT, AMP — and you don't press any of the remote buttons for sixty seconds, a "time-out" occurs, returning the remote to TV mode.

4. Mechanical Instructions

Index of this chapter:

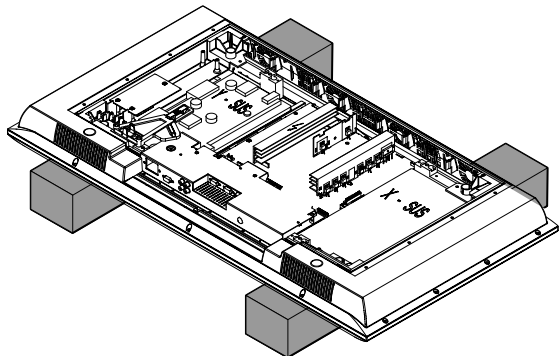
1. Service Positions
2. Assy / CBA Removal
3. Re-assembly

Notes:

- Figures below can deviate slightly from the actual situation, due to the different set executions.
- Follow the disassemble instructions in described order.

4.1 Service Positions

4.1.1 The Foam Bars



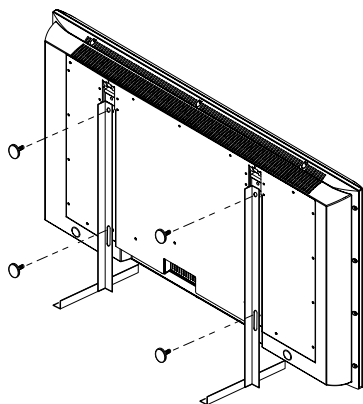
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190603

Figure 4-1 Foam bars

To put the TV set in its service position place it upside down on a table top (use foam cushions or a protection sheet). The foam bars (order code 3122 785 90580 for two pieces) can be used for all types and sizes of Flat TVs. By laying the plasma or LCD TV flat on the (ESD protective) foam bars, a stable situation is created to perform measurements and alignments. By first placing a mirror flat on the table under the TV you can easily read the screen.

Caution: When using a sheet, the plasma screen can become very hot. Therefore, it is advised to use foam cushions.

4.1.2 The Aluminum Stands



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040703

Figure 4-2 Aluminium stands

The aluminum stands (order code 3122 785 90480 for two pieces) can also be used to do measurements and alignments and they are also very suitable to perform duration tests. With this stands the set does not take much space, has no risk of

over heating, and/or falling. The stands can be mounted and removed quickly and easily with use of the provided screws, which can be tightened and loosened manually without the use of tools.

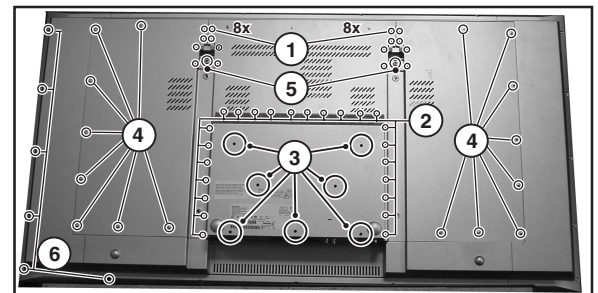
The stands are also handy to replace the screen.

Caution: Only use the screws provided, otherwise it is possible to damage the monitor inside.

4.2 Assy/CBA Removal

4.2.1 Metal Back Plate

Warning: Disconnect the mains power cord before you remove the rear cover.



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181103

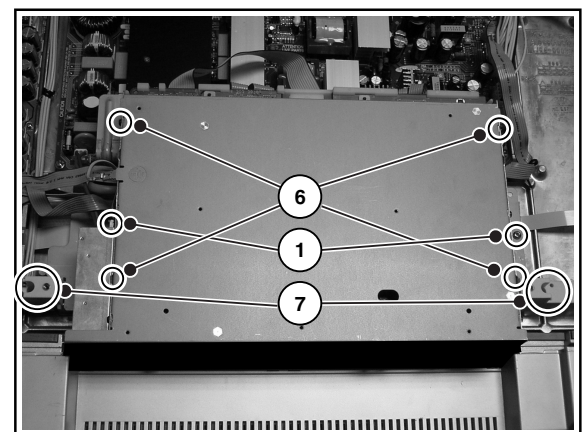
Figure 4-3 Rear cover removal

Notes:

- Do not remove the T8 screws (1) around and above the "stand holes".
 - Also, do not remove the T8 screws (2) around the SSP outer box.
1. Remove all T10 metric screws (3) from the center part of the metal back plate.
 2. Remove all T10 parker screws (4), some of them are indicated on the figure above.
 3. Remove two T20 screws (5).
 4. Lift the metal back plate from the cabinet. Make sure that wires and flat foils are not damaged during cover removal.

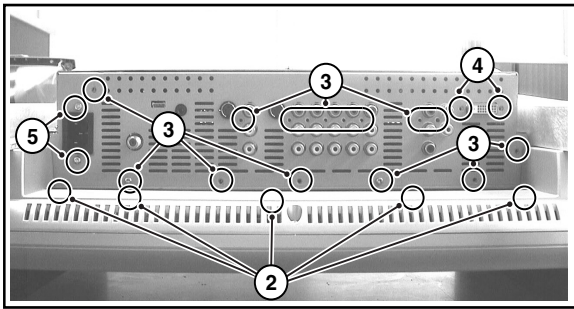
4.2.2 Small Signal Panel

Small Signal Panel (SSP) Box disassembly

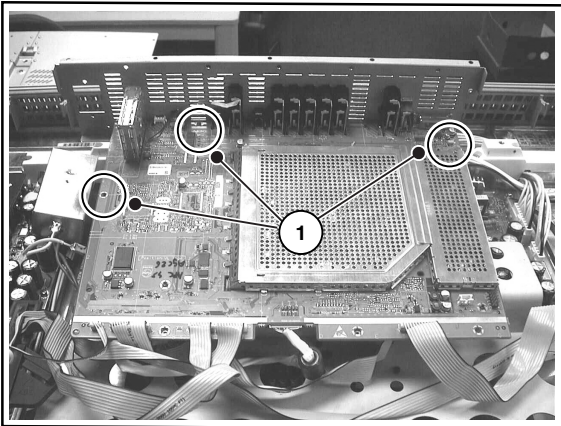


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290104

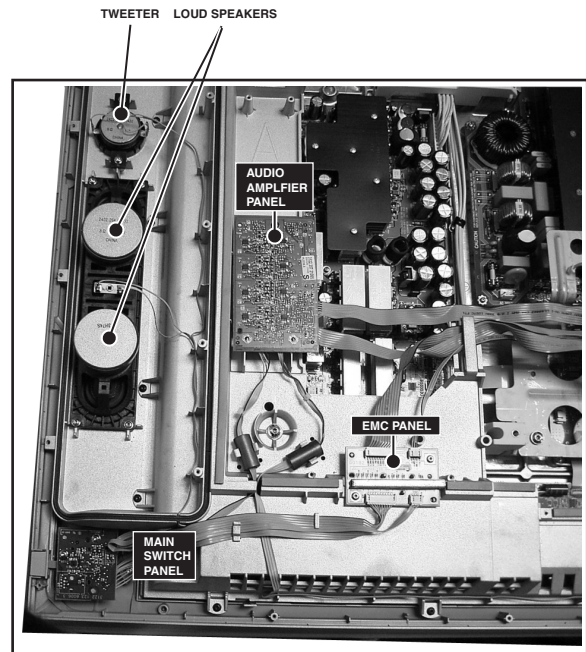
Figure 4-4 SSP Box Top view

CL 36532075_060.eps
280104**Figure 4-5 SSP Box Front view**

1. Release the AC input cables from the Plasma Panel and SSP.
2. Remove the mounting screws (1) at the both sides of the SSP Box.
3. Remove all mounting screws (2) at the front side of the SSP Box.
4. Remove all metric screws (3) at the front side of the SSP Box.
5. Use a hex nut driver or pliers to remove both connector fixing screws (4) by the DVI-D connector.
6. Remove the two silver colored metric mounting screws (5) by the mains cord.
7. Carefully turn upside-down the SSP Box. Remove the two mounting screws at the bottom side of the SSP Box.
8. Turn the SSP Box back to the initial position. Carefully use a flat screwdriver to release the metal clamps (6) at the both sides of the SSP Box (see figure: "SSP Box top view").

SSP removalCL 36532075_061.eps
290104**Figure 4-6 SSP removal**

1. Release all cables from the SSP.
2. Remove all mounting screws from the SSP (1).
3. Remove the SSP.

4.2.3 Audio Amplifier PanelCL 36532075_055.eps
181103**Figure 4-7 Speaker and panel removal**

1. Disconnect all cables from the panel.
2. Remove the fixing screws from the panel.
3. Remove the panel.

4.2.4 EMC Interface Panel and Main Switch Panel

See figure "Speaker and panel removal".

Note: Before removing the EMC Interface Panel and Main Switch Panel you have to remove the plastic rear cover.

1. Remove all T10 parker screws (6) around edges of the plastic rear cover, some of them are indicated on figure "Rear cover removal".
2. Disconnect all cables from the panels.
3. Remove the fixing screws from the panels.
4. Remove the panels.

4.2.5 Plasma Panel

Make sure, that the power is switched "off" and that the necessary cables are disconnected.

Note: Before replacing the Plasma Panel, first remove SSP Box, Audio Amplifier Panel and EMC Interface Panel, as described above.

1. Remove the four PDP brackets, two of them are indicated (7) on the figure "SSP Box Top view".
2. Remove all fixing screws from the Shielding Frame. Lift and remove the Shielding Frame.
3. Remove all fixing screws from the Plasma Panel. Lift and remove the Plasma Panel.

4.3 Set Re-assembly

To re-assemble the whole set, execute all processes in reverse order.

Note: While re-assembling, make sure, that all cables are placed and connected in their original position

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

1. Test points
2. Service Modes
3. Problems and solving tips (related to CSM)
4. ComPair
5. Error Codes
6. The blinking LED procedure
7. Protections
8. Repair tips
9. Software downloading

5.1 Test Points

The chassis is equipped with test points printed on the circuit board assemblies.

Perform measurements under the following conditions:

- Service Default Mode.
- Video: color bar signal.
- Audio: 3 kHz left, 1 kHz right.

5.2 Service Modes

Service Default Mode (SDM) and Service Alignment Mode (SAM) offer several features for the service technician, while the Customer Service Mode (CSM) is used for communication between a Philips Customer Care Centre (P3C) and a customer.

There is also the option of using ComPair, a hardware interface between a computer (see requirements below) and the TV chassis. It offers the ability of structured troubleshooting, test pattern generation, error code reading, software version readout, and software upgrading.

Minimum requirements: a Pentium processor, Windows 95/98, and a CD-ROM drive (see also paragraph "ComPair").

5.2.1 Service Default Mode (SDM)

Purpose

- To create a pre-defined setting, to get the same measurement results as given in this manual.
- To override SW protections.
- To start the blinking LED procedure.

Specifications

- Tuning frequency: 61.25 MHz (channel 3).
- Color system: NTSC.
- All picture settings at 50 % (brightness, color, contrast).
- All sound settings at 50 %, except volume at 25 %.
- All service-unfriendly modes (if present) are disabled, like:
 - (Sleep) timer.
 - Child/parental lock.
 - Blue mute.
 - Automatic volume limiter (AVL).
 - Auto switch-off (when no video signal was received for 10 minutes).
 - Skip/blank of non-favorite pre-sets.
 - Smart modes.
 - Auto store of personal presets.
 - Auto user menu time-out.

How to enter SDM

Use one of the following methods:

- Use the standard RC-transmitter and key in the code "062596", directly followed by the "MENU" button.
Note: It is possible that, together with the SDM, the main menu will appear. To switch it off, push the "MENU" button again.

- Short for a moment the two solder pads (item 9018) on the SSP, with the indication "SDM". Activation can be performed in all modes, except when the set has a problem with the main microprocessor.

Caution: If the SDM is entered via the pins, all the software-controlled protections are de-activated.

- Use the DST-emulation feature of ComPair.
- Use the "DEFAULT" button on the Dealer Service Tool (RC7150, this remote is no longer available).

After entering this mode, "SDM" will appear in the upper right corner of the screen.

How to navigate

When you press the "MENU" button on the RC transmitter, the set will toggle between the SDM and the normal user menu (with the SDM mode still active in the background).

How to exit SDM

Use one of the following methods:

- Switch the set to STANDBY via the RC-transmitter.
- Press the "EXIT" button in the DST-emulation feature of ComPair.
- Via a standard customer RC-transmitter: key in "00"-sequence.

5.2.2 Service Alignment Mode (SAM)

Purpose

- To perform (software) alignments.
- To change option settings.
- To easily identify the used software version.
- To view operation hours.
- To display (or clear) the error code buffer.

Specifications

- Operation hours counter.
- Software version.
- Option settings.
- Error buffer reading and erasing.
- Software alignments.

How to enter SAM

Use one of the following methods:

- Via a standard RC transmitter: key in the code "062596" directly followed by the "OSD [i+]" button. After entering SAM with this method a service warning will appear on the screen, you can continue by pressing any digit key on the RC.
- Short for a moment the two solder pads (item 9017) on the SSP with the indication "SAM". Depending on the software version, it is possible that a service warning will appear. You can continue by pressing any digit key on the RC.
- Use the DST-emulation feature of ComPair.
- Press the ALIGN button on the DST while the set is in the normal operation

After entering this mode, "SAM" will appear in the upper right corner of the screen.

Contents of SAM:

- **OPERATION HOURS.** Displays the accumulated total of operation hours (not the standby hours).
- **HARDWARE INFO.**
 - **ROM VERSION.** Displays the date of the software and the software version of the ROM (**example:** TP11US_1.0_01234 = AAAABB_X.Y_NNNNN).
 - **AAAA=** the chassis name.

- **BB**= the region: EU= Europe, AP= Asia Pacific PAL/Multi, AN= Asia Pacific NTSC, US= USA, LT= LATAM.
- **X.Y**= the software version, where X is the main version number (different numbers are not compatible with one another) and Y is the sub version number (a higher number is always compatible with a lower number).
- **NNNNN**= last five digits of 12nc code software.
- **FBX VERSION** (if present). Displays the software version of the FBX.
- **SW VERSION EPLD**. Displays the software version of the EPLD.
- **ERRORS**. (followed by maximal 10 errors). The most recent error is displayed at the upper left (for an error explanation see paragraph "Error Codes").
- **DEFECTIVE MODULE**. Here the module that generates the error is displayed. If there are multiple errors in the buffer, which are not all generated by a single module, there is probably another defect. It will then display the message "UNKNOWN" here.
- **RESET ERROR BUFFER**. When you press the "OK" button, the error buffer is reset.
- **ALIGNMENTS**. This will activate the "ALIGNMENTS" sub-menu.
- **DEALER OPTIONS**. Extra features for the dealers.
- **SERVICE OPTIONS**. Extra features for Service.
- **INITIALISE NVM**. When an NVM was corrupted (or replaced) in the former EM3 chassis, the microprocessor replaces the content with default data (to assure that the set can operate). However, all pre-sets and alignment values are gone now, and option numbers are not correct. Therefore, this was a very drastic way. In this chassis, the procedure is implemented in another way: The moment the processor recognizes a corrupted NVM, the "initialise NVM" line will be highlighted. Now, you can do two things (dependent of the service instructions at that moment):
 - Save the content of the NVM via ComPair for development analysis, **before** initializing. This will give the Philips Service department an extra possibility for diagnosis (e.g. when Development asks for this).
 - Initialize the NVM (same as in the past, however now it happens conscious).
- **STORE**. All options and alignments are stored when pressing the "OK"-button
- **FUNCTIONAL TEST**. All devices are tested via the "OK" button. Eventual errors are displayed in the error buffer. The error buffer is not erased, the content returns when this test is terminated.
- **DAILY MENUS**. With the "OK" button, you can go to the normal user menu. SAM is still active in the background. With the "MENU" button, you return from the user menu to SAM menu. This feature can be helpful to quickly change some settings in the user menu.
- **SW MAINTENANCE**.
 - **UPGRADE**. More info see paragraph "Software downloading".

How to navigate

- In SAM, you can select the menu items with the "CURSOR UP/DOWN" key on the RC-transmitter. The selected item will be highlighted. When not all menu items fit on the screen, move the "CURSOR UP/DOWN" key to display the next/previous menu items.
- With the "CURSOR LEFT/RIGHT" keys, it is possible to:
 - (De) activate the selected menu item.
 - Change the value of the selected menu item.
 - Activate the selected submenu.

How to exit SAM

Use one of the following methods:

- Press the "MENU" button on the RC-transmitter, or
- Switch the set to STANDBY via the RC-transmitter, or
- Press the "EXIT" button on the DST.

5.2.3 Customer Service Mode (CSM)

Purpose

When a customer is having problems with his TV-set, he can call his dealer. The service technician can then ask the customer to activate the CSM, in order to identify the status of the set. Now, the service technician can judge the severity of the complaint. In many cases, he can advise the customer how to solve the problem, or he can decide if it is necessary to visit the customer.

The CSM is a read only mode; therefore, modifications in this mode are not possible.

How to enter CSM

Use one of the following methods:

- Press the "MUTE" button on the RC-transmitter **simultaneously** with the "MENU" button on the TV (top control) for at least 4 seconds.
- Key in the code "123654" via the standard RC transmitter.

Note: Activation of the CSM is only possible if there is no (user) menu on the screen!

How to navigate

By means of the "CURSOR-DOWN/UP" knob on the RC-transmitter, you can navigate through the menus.

Contents of CSM

CUSTOMER SERVICE MENU 1

- **SOFTWARE VERSION (example: TP11US_1.0_01234)**. Displays the built-in software version. In case of field problems related to software, software can be upgraded (for more details, see paragraph Software downloading).
- **SOFTWARE VERSION EPLD**. The 12NC-number of the built-in EPLD software.
- **FEATURE BOX**. The 12NC-number of the built-in Feature Box software.
- **SET TYPE**. This information is very helpful for a helpdesk/workshop as reference for further diagnosis. In this way, it is not necessary for the customer to look at the rear of the TV-set.
- **CODE 1**. Gives the latest five errors of the error buffer. As soon as the built-in diagnose software has detected an error the buffer is adapted. The last occurred error is displayed on the leftmost position. Each error code is displayed as a 3-digit number. When less than 10 errors occur, the rest of the buffer is empty (000). See also paragraph Error Codes for a description.
- **CODE 2**. Gives the first five errors of the error buffer. See also paragraph Error Codes for a description.
- **VOLUME**. Gives the last status of the volume as set by the customer. The value can vary from 0 (volume is minimum) to 100 (volume is maximum). Volume values can be changed via the volume key on the RC-transmitter.
- **BRIGHTNESS**. Gives the last status of the brightness as set by the customer. The value can vary from 0 (brightness is minimum) to 100 (brightness is maximum). Brightness values can be changed via the "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "PICTURE" and "BRIGHTNESS".
- **CONTRAST**. Gives the last status of the contrast as set by the customer. The value can vary from 0 (contrast is minimum) to 100 (contrast is maximum). Contrast values can be changed via "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "PICTURE" and "CONTRAST".

CUSTOMER SERVICE MENU 2

- **COLOUR.** Gives the last status of the color saturation, as set by the customer. The value can vary from 0 (color is minimum) to 100 (color is maximum). Colour values can be changed via "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "PICTURE" and "COLOUR".
- **HUE.** Only relevant for NTSC-signals (e.g. some NTSC-DVD-discs).
- **SHARPNESS.** Gives the sharpness value. The value can vary from 0 (sharpness is minimum) to 7 (sharpness is maximum). In case of bad antenna signals, a too high value of the sharpness can result in a noisy picture. Sharpness values can be changed via the "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "PICTURE" and "SHARPNESS".
- **HEADPHONE VOLUME.** Gives the last status of the headphone volume, as set by the customer. The value can vary from 0 (volume is minimum) to 100 (volume is maximum). Headphone volume values can be changed via the "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "SOUND" and "HEADPHONE VOLUME".
- **SURROUND MODE.** Indicates the by the customer selected surround mode (or automatically chosen mode). Possible values are "OFF", "INCREDIBLE SURROUND" OR "DOLBY VIRTUAL". These settings can be influenced after pressing the "MENU" button and selecting "SOUND" and SURROUND MODE". It can also have been selected automatically by signaling bits (internal software).
- **DIGITAL OPTION.** Gives the selected digital mode, "PROGRESSIVE SCAN", "MOVIE PLUS" or "PIXEL PLUS". Change via "MENU", "PICTURE", "DIGITAL OPTIONS" (Not applicable for this set. Only "STANDARD" will be displayed).
- **BALANCE.** Indicates the balance settings, between "-50" and "+50". Change via "MENU", "SOUND", and "BALANCE". Not applicable for Dolby Pro Logic sets.

CUSTOMER SERVICE MENU 3

- **CENTRE MODE.** Indicates if centre mode is set "ON" or "OFF". When centre mode is on, all TV speakers are used as one centre speaker. Change Centre mode via "MENU", "SETUP", "SPEAKERS", and "CENTRE MODE".
- **DNR.** Gives the selected DNR setting (Dynamic Noise Reduction), "OFF", "MINIMUM", "MEDIUM", or "MAXIMUM". Change via "MENU", "PICTURE", "DNR".
- **NOISE FIGURE.** Gives the noise ratio for the selected transmitter. This value can vary from 0 (good signal) to 127 (average signal) and to 255 (bad signal). For some software versions, the noise figure will only be valid when "Active Control" is set to "medium" or "maximum".
- **SOURCE.** Indicates which source is used and the video/ audio signal quality of the selected source. (Example: Tuner, Video/NICAM) Source: "TUNER", "EXT1", "EXT2", "EXT3", "EXT4", "SIDE", "AV1", "AV2", "AV3" or "AV4". Video signal quality: "VIDEO", "S-VIDEO", "RGB 1FH", "YPBPR 1FH 480P", "YPBPR 1FH 576P", "YPBPR 1FH 1080I", "YPBPR 2FH 480P", "YPBPR 2FH 576P", "YPBPR 2FH 1080I", "RGB 2FH 480P", "RGB 2FH 576P" or "RGB 2FH 1080I". Audio signal quality: "STEREO", "SPDIF 1", "SPDIF 2", or "SPDIF".
- **AUDIO SYSTEM.** Gives information about the audio system of the selected transmitter: "ANALOGUE MONO", "ANALOGUE STEREO", "PCM 2/0", "DD 1/0", "DD 2/0 Ltrt", "DD 2/0 L0R0", "DD 2/1", "DD 2/2", "DD 3/0", "DD 3/1", "DD 3/2", "DD 1+1", "MPEG 1/0", "MPEG 2/0", "MPEG 2/0 Ltrt", "MPEG 2/1", "MPEG 2/2", "MPEG 3/0", "MPEG 3/1", "MPEG 3/2", "MPEG 1+1" or "MPEG 2+2".
- **TUNED BIT.** Not applicable for US sets.
- **SURROUND SPEAKERS.** Not applicable for this set.
- **ON TIMER.** Indicates if the "On Timer" is set "ON" or "OFF" and if the timer is "ON" also displays start time, start day

and program number. Change via "MENU", "TV", "FEATURES", and "ON TIMER".

- **PRESET LOCK.** Not applicable for this set.
- **CHILD LOCK.** Not applicable for this set.

CUSTOMER SERVICE MENU 4

- **TV RATINGS LOCK.** Gives the setting of V-chip as selected by the customer (for more details see user manual).
- **MOVIE RATINGS LOCK.** Gives the ability to select access to individual movies based on their MPAA ratings (for more details see user manual).
- **V-CHIP TV STATUS.** Gives the setting of the V-chip as applied by the selected TV-channel. Same values can be shown as for "TV Ratings Lock".
- **V-CHIP MOVIE STATUS.** Gives the status of the V-chip from the selected TV-channel for individual movies based on their MPAA rating. Same values can be shown as 'Movie Ratings Lock.'
- **OPTIONS 1.** Gives the option codes of option group 1 as set in SAM (Service Alignment Mode).
- **OPTIONS 2.** Gives the option codes of option group 2 as set in SAM (Service Alignment Mode).
- **AVL.** Indicates the last status of AVL (Automatic Volume Level): "ON" or "OFF". Change via "MENU", "TV", "SOUND", "AVL".

CUSTOMER SERVICE MENU 5

- **DELTA VOLUME.** Indicates the last status of the delta volume for the selected preset as set by the customer: from "-12" to "+12". Change via "MENU", "TV", "SOUND", "DELTA VOLUME".

Note: This is **not implemented** yet.

How to exit CSM

Use one of the following methods:

- After you press a key on the RC-transmitter (with exception of the "CHANNEL", "VOLUME" and digit (0-9) keys), or
- After you switch the TV-set "OFF" with the mains switch.

5.3 Problems and Solving Tips (related to CSM)

Note: Below described problems are all related to the TV settings (visible in the CSM menu). The procedures to change the value (or status) of the different settings are described above. New value(s) are automatically stored.

5.3.1 Picture Problems*Snowy/noisy picture*

1. Check in CSM line NOISE FIGURE. In case the value is "127" or higher, and the value is also high on other programs, check the aerial cable/aerial system. For some software versions, the noise figure will only be valid when "Active Control" is set to "medium" or "maximum".
2. Check in CSM lines SHARPNESS and NOISE FIGURE. In case the value of line SHARPNESS is "3" or "4" and the value of line NOISE FIGURE is high ("127" or higher), decrease the "Sharpness" value.

Picture too dark

1. Press "Menu", "TV", "Picture", "Smart Picture". In case the picture improves, increase the "Brightness" or the "Contrast" value. The new value(s) are automatically stored (in "personal" pre-set) for all TV channels.
2. Check in CSM line BRIGHTNESS and CONTRAST. If the value of these lines is low (< "10"), increase the "Brightness" or the "Contrast" value via the user menu.

Picture too bright

1. Press "Menu", "TV", "Picture", "Smart Picture". In case the picture improves, decrease the "Brightness" or the "Contrast" value. The new value(s) are automatically stored (in "personal" pre-set) for all TV channels.
2. Check in CSM lines BRIGHTNESS and CONTRAST. If the value of these lines is high (> 50), decrease the "Brightness" value or increase the "Contrast" value via the user menu.

White line around picture elements and text

1. Press "Menu", "TV", "Picture", "Smart Picture". In case the picture improves, decrease the "Sharpness" value. The new value is automatically stored (in "personal" pre-set) for all TV channels.
2. Check in CSM line "Sharpness". If the value is high, decrease it. The new value is automatically stored for all TV channels.

No picture

Check in CSM line TUNED BIT. In case the value is "No", install the required program again. Open the installation menu and perform manual installation.

No picture

No proper signal is received. Check the aerial cable/aerial system.

No picture or unstable picture

A scrambled or decoded signal is received.

Black and white picture

Check in CSM line COLOUR. In case the value is low (< "10"), increase the "Colour" value via the user menu. The new value is automatically stored for all TV channels.

Menu text not sharp enough

1. Press "MENU", "TV", "PICTURE", "SMART PICTURE". In case picture improves, decrease the contrast value. The new value(s) are automatically stored for all TV channels.
2. Check line "Contrast". The value is high (> 50). Decrease the contrast value.

5.3.2 Sound Problems**No sound from left and right speaker**

Check line "Volume". The value is low. Increase the value of "Volume". The new value(s) are automatically stored (in "personal" pre-set) for all TV channels.

Sound too loud for left and right speaker

Check line "Volume". The value is high. Decrease the value of "Volume". The new value(s) are automatically stored (in "personal" pre-set) for all TV channels.

5.4 ComPair**5.4.1 Introduction**

ComPair (Computer Aided Repair) is a service tool for Philips Consumer Electronics products. ComPair is a further development on the European DST (service remote control), which allows faster and more accurate diagnostics. ComPair has three big advantages:

- ComPair helps you to quickly get an understanding on how to repair the chassis in a short time by guiding you systematically through the repair procedures.
- ComPair allows very detailed diagnostics (on I2C level) and is therefore capable of accurately indicating problem areas. You do not have to know anything about I2C commands yourself because ComPair takes care of this.
- ComPair speeds up the repair time since it can automatically communicate with the chassis (when the

microprocessor is working) and all repair information is directly available. When ComPair is installed together with the SearchMan electronic manual of the defective chassis, schematics and PWBs are only a mouse click away.

5.4.2 Specifications

ComPair consists of a Windows based faultfinding program and an interface box between PC and the (defective) product. The ComPair interface box is connected to the PC via a serial or RS232 cable.

For this chassis, the ComPair interface box and the TV communicate via a bi-directional service cable via the service connector.

The ComPair faultfinding program is able to determine the problem of the defective television. ComPair can gather diagnostic information in two ways:

- Automatic (by communication with the television): ComPair can automatically read out the contents of the entire error buffer. Diagnosis is done on I2C level. ComPair can access the I2C bus of the television. ComPair can send and receive I2C commands to the micro controller of the television. In this way, it is possible for ComPair to communicate (read and write) to devices on the I2C busses of the TV-set.
- Manually (by asking questions to you): Automatic diagnosis is only possible if the micro controller of the television is working correctly and only to a certain extends. When this is not the case, ComPair will guide you through the faultfinding tree by asking you questions (e.g. *Does the screen give a picture? Click on the correct answer: YES / NO*) and showing you examples (e.g. *Measure test-point I7 and click on the correct oscilloscope you see on the oscilloscope*). You can answer by clicking on a link (e.g. text or a waveform picture) that will bring you to the next step in the faultfinding process.

By a combination of automatic diagnostics and an interactive question / answer procedure, ComPair will enable you to find most problems in a fast and effective way.

Beside fault finding, ComPair provides some **additional features** like:

- Up- or downloading of pre-sets (only for Europe sets).
- Managing of pre-set lists (only for Europe sets).
- Emulation of the Dealer Service Tool (DST).
- If both ComPair and SearchMan (Electronic Service Manual) are installed, all the schematics and the PWBs of the set are available by clicking on the appropriate hyperlink.

Example: *Measure the DC-voltage on capacitor C2568 (Schematic/Panel) at the Mono-carrier.*

- Click on the "Panel" hyperlink to automatically show the PWB with a highlighted capacitor C2568.
- Click on the "Schematic" hyperlink to automatically show the position of the highlighted capacitor.

5.4.3 Stepwise Start-up

Under normal circumstances, a fault in the power supply, or an error during start-up, will switch the television to protection mode. ComPair can take over the initialization of the television. In this way, it is possible to distinguish which part of the start-up routine (hence which circuitry) is causing the problem. Take notice that the transition between two steps can take some time, so give the set some time to reach a stable state. During the transition time, the LED can blink strangely.

Stepwise start- up explanation

This is realized via ComPair and is very helpful when a **protection** is activated (see also chapter "Protections"). The following diagram shows the start-up procedure of the set. Every step of the stepwise start-up (also called trapped start-up) in the diagram corresponds with the number of times the led blinks.

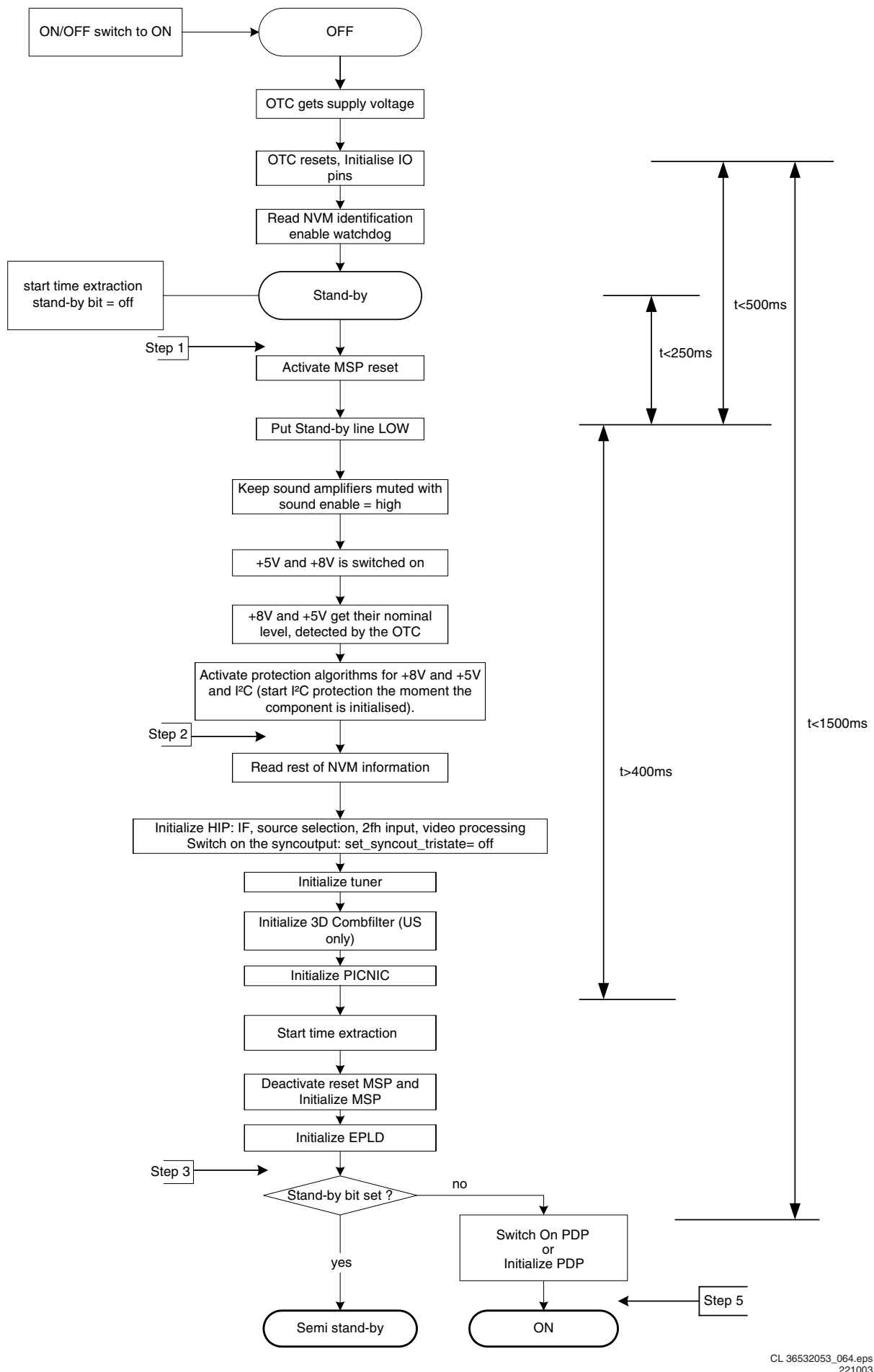


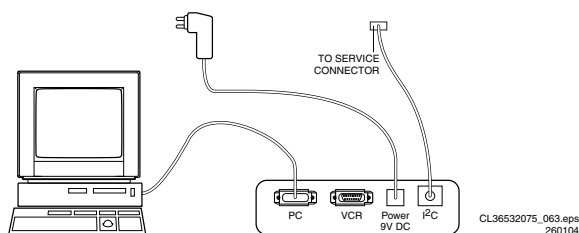
Figure 5-1 Stepwise start-up diagram.

Note (*):

- When the set is in stepwise mode and, due to stepping-up, a protection is activated, the set will really go into protection (blinking LED). The set will not leave the stepwise-mode however. If state X is the state where the set went to protection, stepwise start-up will return to state X-1. At state (X-1) diagnostic measurements can be performed. Also, in the short time the set is in state X but not yet in protection, you can also do some measurements.

5.4.4 How To Connect

- First, install the ComPair Browser software (see the Quick Reference Card for installation instructions).
- Connect the RS232 interface cable between a free serial (COM) port of your PC and the PC connector (marked with "PC") of the ComPair interface.
- Connect the mains adapter to the supply connector (marked with "POWER 9V DC") of the ComPair interface.
- Switch the ComPair interface "OFF".
- Switch the television set "OFF" with the mains switch.
- Connect the ComPair interface cable between the connector on the rear side of the ComPair interface (marked with "I2C") and the ComPair (or Service) connector at the rear side of the TV.
- Plug the mains adapter in a mains outlet, and switch the interface "ON". The green and red LEDs light up together. The red LED extinguishes after approx. 1 second while the green LED remains lit.
- Start the ComPair program and read the "Introduction" chapter.

**Figure 5-2 ComPair interface connection****5.4.5 How To Order**

ComPair order codes:

- ComPair Software: ST4191.
- ComPair Interface Box: 4822 727 21631.
- AC Adapter: T405-ND.
- ComPair Quick Start Guide: ST4190.
- ComPair firmware upgrade IC: 3122 785 90510

Note: If you encounter any problems, contact your local support desk.

5.5 Error Codes**5.5.1 Introduction**

The error code buffer contains all detected errors since the last time the buffer was erased. The buffer is written from left to right, new errors are logged at the left side, and all other errors shift one position to the right.

When an error has occurred, the error is added to the list of errors, provided the list is not full or the error is a protection error.

When an error occurs and the error buffer is full, then the new error is not added, and the error buffer stays intact (history is maintained), except when the error is a protection error.

To prevent that an occasional error stays in the list forever, the error is removed from the list after 50+ operation hours.

When multiple errors occur (errors occurred within a short time span), there is a high probability that there is some relation between them.

5.5.2 How to read the Error Buffer

Use one of the following methods:

- On screen via the SAM (only if you have a picture).
Examples:
 - 0 0 0 0 0**: No errors detected
 - 6 0 0 0 0**: Error code 6 is the last and only detected error
 - 9 6 0 0 0**: Error code 6 was first detected and error code 9 is the last detected error
- Via the blinking LED procedure (when you have no picture). See next paragraph.
- Via ComPair.

5.5.3 How to clear the Error Buffer

Use one of the following methods:

- By activation of the "RESET ERROR BUFFER" command in the SAM menu.
- With a normal RC, key in sequence "MUTE" followed by "062599" and "OK".
- When you transmit the commands "DIAGNOSE" - "99" - "OK" with ComPair (or with a DST).
- If the content of the error buffer has not changed for 50+ hours, it resets automatically.

5.5.4 Error Codes

In case of non-intermittent faults, clear the error buffer before you begin the repair. This to ensure that old error codes are no longer present. Before clearing the buffer, write down the content, as this history can give you significant information. If possible, check the entire contents of the error buffer. In some situations, an error code is only the result of another error code and not the actual cause (e.g., a fault in the protection detection circuitry can also lead to a protection).

There are various errors:

- I2C device errors.
- I2C bus errors.
- Protection errors.
- Errors not related to an I2C device, but of importance:
 - FALCONIC (ERROR 26)**: at start-up, after initialization of the PICNIC, the presence of the FALCONIC can be checked.
 - EAGLE (ERROR 27)**: at start-up, after initialization of the PICNIC, the presence of the Eagle can be checked.

Table 5-1 Error Code Table

Error	Device	Description	Def. item	Def. Module indication	Diagram
1	M24C32	NVM, spontaneous blinking error 1	7011	Control	B5a
3	SAA4978	PICNIC	7713	Feature Box	B3a
4	Supply 5 V	5V protection		+5V Supply	B5a
5	Supply 8 V	8V protection		+8V Supply	B5a
6	Slow I2C bus blocked	Spontaneous blinking error 6		Slow I2C Blocked	
8	TDA932x	HIP High-end Input Processor	7323	Chroma IF IO	B2
13	UV1318/...	Tuner protection	1T01	Tuner	B13
14	MSPxxxx	ITT sound processor	7A02	Audio module	B6a
15	uPD64083	3D Combfilter	7B00	Video control	B11
18	Fast I2C bus blocked	Spontaneous blinking error 18		Fast I2C Blocked	
21	M62320P	I/O Expander	7P56	Video Dual Screen	B15b
25	Z86130	V-Chip	7P51	Video Dual Screen	B15b
26	SAA4992	Falconic	7718	+3V (FBX) Supply	B3b
27	T8F24EF	Eagle	7724	+3V (FBX) Supply	B3c
32	M29W400BT	Flash Ram (EPG)	7012	EPG Memory	B5a
53	AD9883A	AD converter 2fh input	7L01	HD	B19c
55	3V3_PDP	One of the voltages is not ok + protection error		Supply	
56	EPLD	EPLD error	7V01	Video control	B19d,f
76	Audio Amplifier	Audio DC protection			A
83	TEA6422	Source select matrix audio	7I17	Audio Source Select	B14d

Note:

- Error codes 1, 6, or 18 are protection codes and in this case, supplies of some circuits will be switched "OFF". Also, in protection, the LED will blink the number of times equivalent to the most recent error code.

- Transmit the commands "MUTE" - "062500" - "OK" with a normal RC. The complete error buffer is shown. Take notice that it takes some seconds before the blinking LED starts.
- Transmit the commands "MUTE" - "06250x" - "OK" with a normal RC (where "x" is a number between 1 and 5). When x= 1 the last detected error is shown, x= 2 the second last error, etc.... Take notice that it takes some seconds before the blinking LED starts.
- "DIAGNOSE X" with the DST (where "x" is a number between 1 and 5). When x= 1 the last detected error is shown, x= 2 the second last error, etc.... When x = 0 all errors are shown.

5.6 The Blinking LED Procedure

5.6.1 Introduction

Via this procedure, you can make the contents of the error buffer visible via the front LED. This is especially useful for fault finding, when there is no picture.

When the SDM is entered, the front LED will show (blink) the contents of the error-buffer. Error-codes > 10 are shown as follows:

- A long blink of 750 ms (which is an indication of the decimal digit),
- A pause of 1.5 s,
- "n" short blinks (where "n" = 1 - 9),
- When all the error-codes are displayed, the sequence finishes with a LED blink of 3 s,
- The sequence starts again.

Example: Error 12 9 6 0 0.

After activation of the SDM, the front LED will show:

- 1 long blink of 750 ms (which is an indication of the decimal digit) followed by a pause of 1.5 s,
- 2 short blinks followed by a pause of 3 s,
- 9 short blinks followed by a pause of 3 s,
- 6 short blinks followed by a pause of 3 s,
- 1 long blink of 3 s to finish the sequence,
- The sequence starts again.

Note: If errors 1, 6, or 18 occur, the LED always gives the last occurred error even if the set is NOT in service mode.

5.6.2 How to Enter

Use one of the following methods:

- Enter the SDM (only via soldering pads marked "SDM" on SSP). The blinking front LED will show the entire contents of the error buffer (this works in "normal operation" mode and in "protection" mode).

5.7 Protections

5.7.1 Introduction

This chassis has only one microprocessor (OTC), which remains active during Standby. This because power of the microprocessor and the attached memory chip set is coming from the 3V3 supply, which is derived from the 5V Standby-circuitry. Therefore, in both Power-on as in Standby mode, the microprocessor is connected to this power supply.

If a fault situation is detected, an error code will be generated and if necessary, the set is put in protection mode. The protection mode is indicated by the blinking of the front LED at a frequency of 3 Hz (or by a coded blinking in special cases).

The content of the error buffer can be read via the service menu (SAM), the blinking LED procedure or via DST/ComPair.

To get a quick diagnosis, this chassis has three service-modes implemented:

- The **Customer Service Mode (CSM)**.
- The **Service Default Mode (SDM)**. Start-up of the set in a predefined way.
- The **Service Alignment Mode (SAM)**. In this mode, items of the set can be adjusted via a menu.

You can enter both SDM and SAM modes via the "service pads" on the SSP, via an RC-transmitter (DST or standard RC), or via ComPair. It is not possible to enter the SAM in "standby"; the TV has to be in "normal operation" mode.

The “Protection Diagram” shows the structure of the protection system. See diagram below.

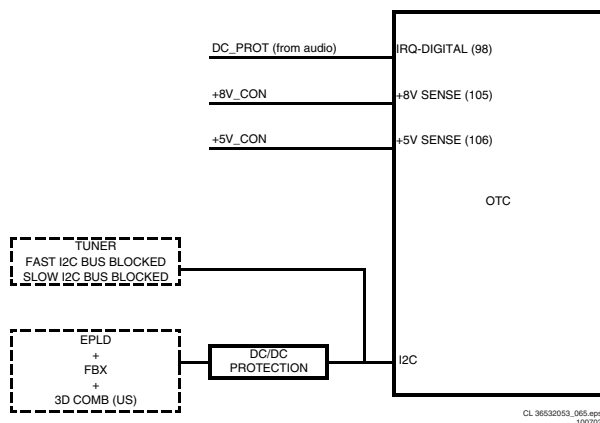


Figure 5-3 Protection diagram.

There are several types of protections:

- I2C related protections.
- OTC related protections (via polling on I/O pins or via algorithms).
- Hardware protection

All protections are explained hereafter.

5.7.2 I2C Related Protections

In normal operation, some registers of the I2C controlled ICs are refreshed every 200 ms. During this sequence, the I2C busses and the I2C ICs are checked.

An I2C protection will take place if the SDA and SCL lines are short-circuited to ground, or to each other. An I2C error will also occur, if the power supply of the IC is missing.

3V3_PDP protection: When the 3V3 supply is short-circuited or interrupted the set switches off and goes into protection. The FBX, EPLD IC and 3D comb (US only) have no supply voltage and give no acknowledge. In this case the set should go into protection. An error code is written in the NVM: 3V3_PDP error.

FBX protection: the FBX protection is not available anymore.

5.7.3 OTC Related Protections

If a protection is detected at an OTC input, the OTC will start to scan all protection inputs every 200 ms for 5 times. If the protection on one of the inputs is still active after 1 s, the microprocessor will put the set in the protection mode. Before the scanning is started, a so-called “ESD refresh” is carried out. This is done, because the interrupt on one of the inputs is possibly caused either by a flash or by ESD. As a flash or ESD can influence IC settings, the HIP, MSP, 3D Comb (US only) and wireless module (not used in this set) are initialized again, to ensure the normal picture and sound conditions of the set.

8 V and 5 V protections: The microprocessor senses the presence of the 8 V and 5 V (via the “+5V_CON” and “+8V_CON” lines). If one (or both) of these voltages is (are) not present, an error code is stored in the error buffer of the NVM, and the set is put in the protection mode.

Audio DC protection: The OTC senses if the audio module is in protection via IRQ-DIGITAL (pin 98 of OTC). If this is the case, the OTC puts the set in protection.

5.7.4 Hardware Protection

Short-circuiting the 3V3 supply from the PDP will bring the TV in protection mode. The absence of the 3V3 supply line is also sensed via I2C and will be mentioned in the error overview.

5.8 Repair tips

5.8.1 3V3 Supply

As mentioned above, the 3V3 supply is switched “off” when something goes wrong (detection of a missing 3V3 supply at one of the devices supplied by the 3V3). Because of this, the set goes to protection (I2C protection). Error code 55 is logged. For further diagnoses of the SSP, you need to overrule the I2C protection: put the set in Service Default Mode by means of the solder pads on the SSP. Connect an external 3V3 supply at connector 1Y81 (B20) and make sure the current is limited to approximately 1200 mA. If the supplied current exceeds 1100 mA (approximately normal working current) you can conclude that one of the devices supplied by 3V3 is short-circuited on the SSP. If the current does not exceed 1100mA the supply of the PDP is defective.

5.8.2 ComPair

This chassis does not have an IR transmitting LED (as in MG-sets). Therefore, a “Service” (ComPair) connector is implemented at the rear side of the set, which is directly accessible. In addition to this, there is also a blinking LED procedure to show the contents of the error buffer.

When you use ComPair, you have the possibility to activate a “stepwise start-up” mode. With this mode, you can initiate the start-up sequence step by step. This also means that in certain steps, some protections are not activated. This is sometimes very convenient during repair.

5.8.3 Protections

Activating SDM via the “service pads” will overrule the processor-controlled protections, but not the hardware protections. This means, that the A/D-input protections (5 and 8 V) and the I2C “not-acknowledging” info of FBX + EPLD + 3D Comb (US) and of the tuner are overruled.

Caution: When doing this, the service technician must know what he is doing, as it could lead to damaging the set.

5.8.4 Power Supply

The power supply is part of the PDP display, which is not described in this manual. However for normal operation at least +9V-STBY and +9V-STBY-SW must be available, both are available on connector 1Y82 of SSP. When this is valid the standby voltage +5V2-DISP must be available otherwise OTC is not powered.

Table 5-2 Repair tips

Phenomenon	Possible Cause	Repair tip
No picture, LED blinking at 3 Hz.	Set is in protection due to various causes. For error codes see error-code list.	You have no picture, so: Read the error buffer via ComPair (error buffer is accessible when set is in protection, compare-file will guide you to this) Read the blinking LED information via standard remote command < mute > 06250x < ok > . Or you read the error code sequence via standard remote command < mute > 062500 < ok > . When you have found the error, check the circuitry related to the supply voltage and I2C-communication or the circuitry that triggers the protection.
No picture, LED blinking with code 6-6-6 or 18-18-18.	No communication on slow I2C- or fast I2C-bus.	As processor cannot communicate with one of the 2 busses it the standby-led spontaneously starts blinking 6-6-6-etc or 18-18-18-etc... If in the error buffer somewhere is an error 6 or 18, these will have the highest priority starting the mentioned blinking. Measure dependent of the error on the I2C-bus which device is loading the bus. (Use I2C-overview)
No picture, LED blinking with code 1-1-1.	No communication on NVM-I2C bus to the uP.	As the uP cannot communicate with the NVM I2C bus, it spontaneously starts blinking 1-1-1. Note: when there is no access to the NVM, a lot of picture setting can go wrong.
No RC-reception. LED does not echo RC-commands.	uP circuitry or RC-receiver is defective.	In case the set does react on a local keyboard operation, you must check the RC-receiver circuitry (diagram LD).
Picture is not synchronised.	The sync is derived in the HIP.	Check crystals in the HIP circuit on bad contacts.
Picture is distorted.	Check video-path in Service Default Mode.	Investigate whether there is an error code present in the error buffer. In case there is one, check the I2C-bus and/or supply lines (see overview supply lines). Measure and check signal path Tuner-HIP-FBX-EPLD.
Picture with horizontal stripes.	Pixel Plus processing is malfunctioning.	Check functionality on circuitry (B3a, B3b, and B3c) of PICNIC (7713), FALCONIC (7718, EAGLE (7724) and/or field memories (7714, 7717, 7719, 7722 and 7723). Tip: the whole Pixel Plus chipset (3 ICs + 5 Field Memories) can be diagnosed via ComPair.
No menu, no OSD.	Probably a defective uP.	Measure test points B61 to B64 on diagram B5A.
Various symptoms, due to missing local supply voltage.	An interrupted fuse, NFR-resistor or connection.	When no symptom or error code leads you to a specific circuitry, use the supply lines overview (see supply lines overview), for a quick scan of all supply lines.

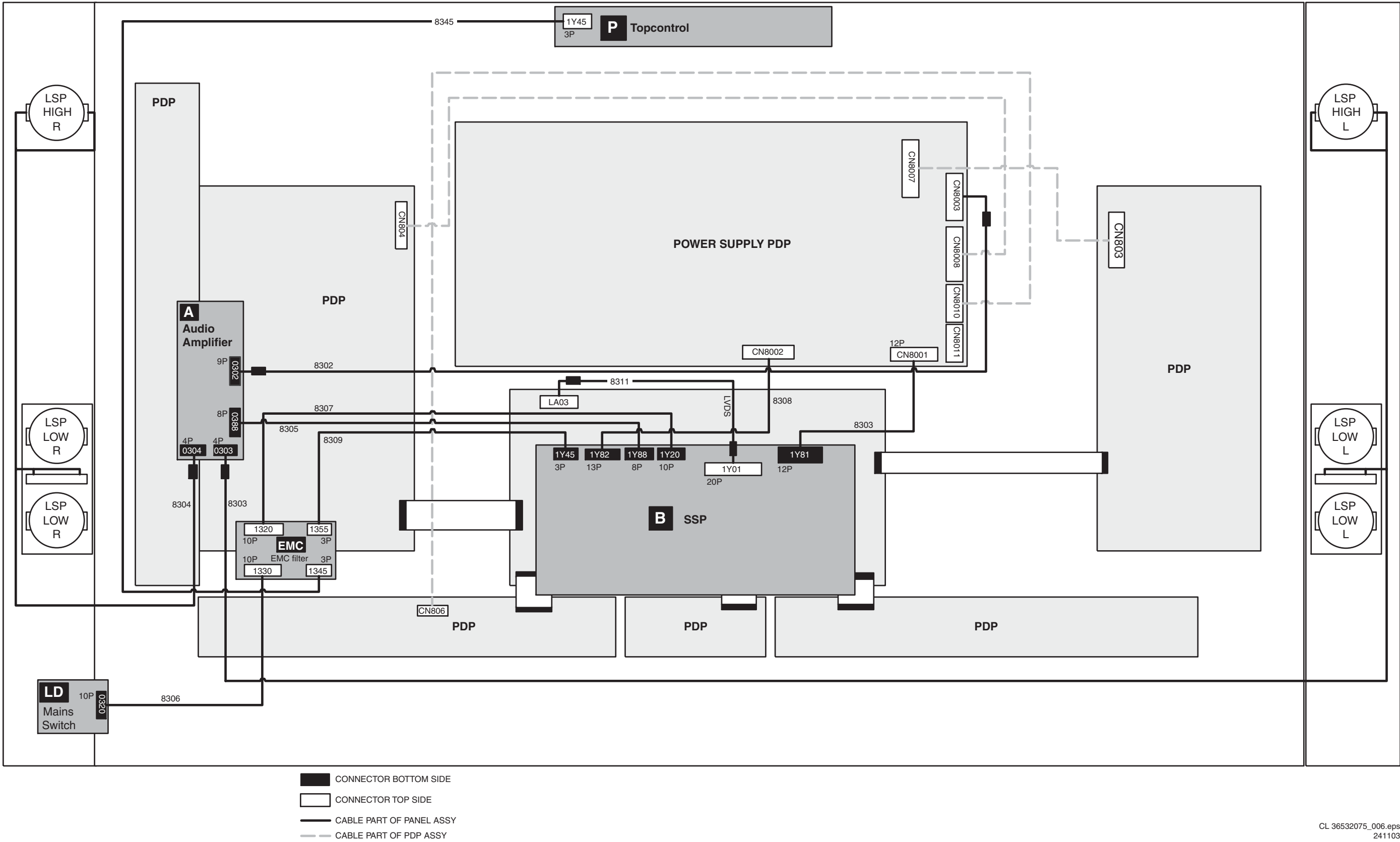
5.9 Software Downloading

In this chassis, you can **upgrade** the “main” software via ComPair without removing the back cover of the set. The switch, which is needed for the software downloading procedure, can be reached through a gap of the back cover. The switch is located next to the SAM/SDM pads and can be operated with a long and thin (plastic) screwdriver. Make sure that you do not damage the PWB with sharp objects. You can find more information on how this procedure works in the ComPair file. It is possible that not all sets are equipped with the hardware, needed to make software upgrading possible. To speed up the programming process, the firmware IC of the ComPair interface can be upgraded (every registered customer receives this IC free of charge)

Personal Notes:

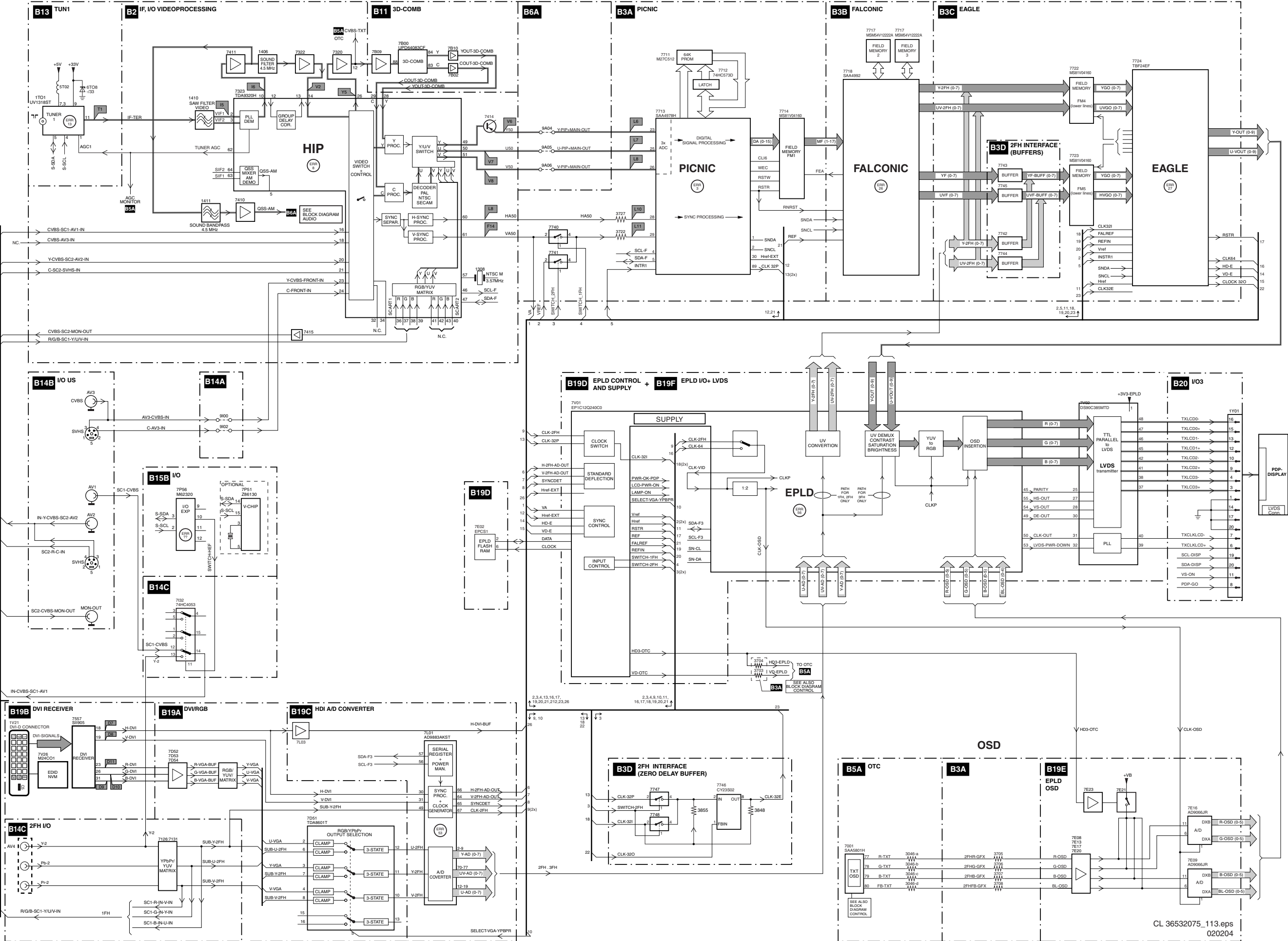
6. Wiring Diagram, Block Diagrams and Overviews

Wiring Diagram



Block Diagram Video

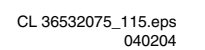
VIDEO



SSP SIDE A



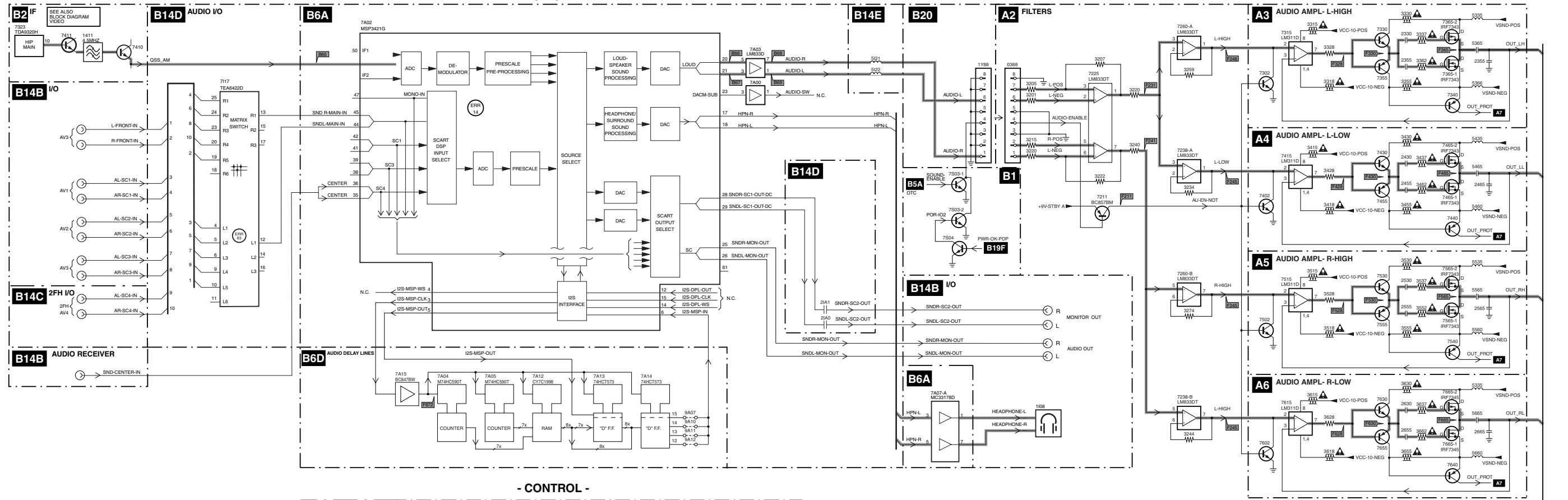
7713	
PIN	TP
23	L6
25	L7
26	L8
28	L10
29	L11
34	L9



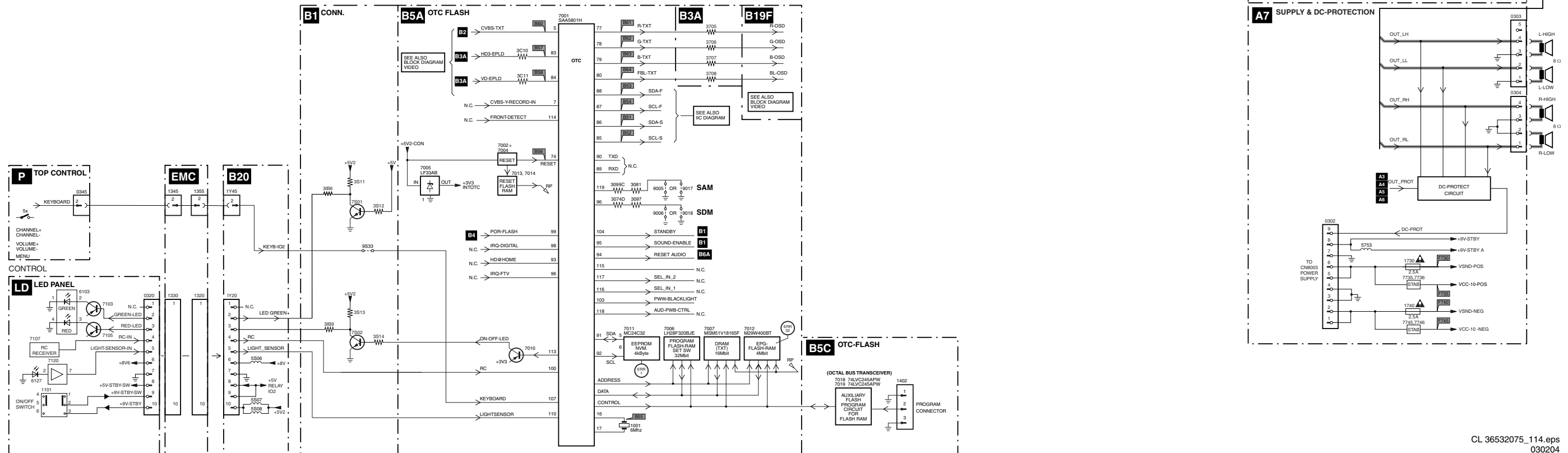
Block Diagram Audio & Control

BLOCK DIAGRAM AUDIO & CONTROL

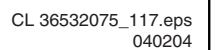
- AUDIO -



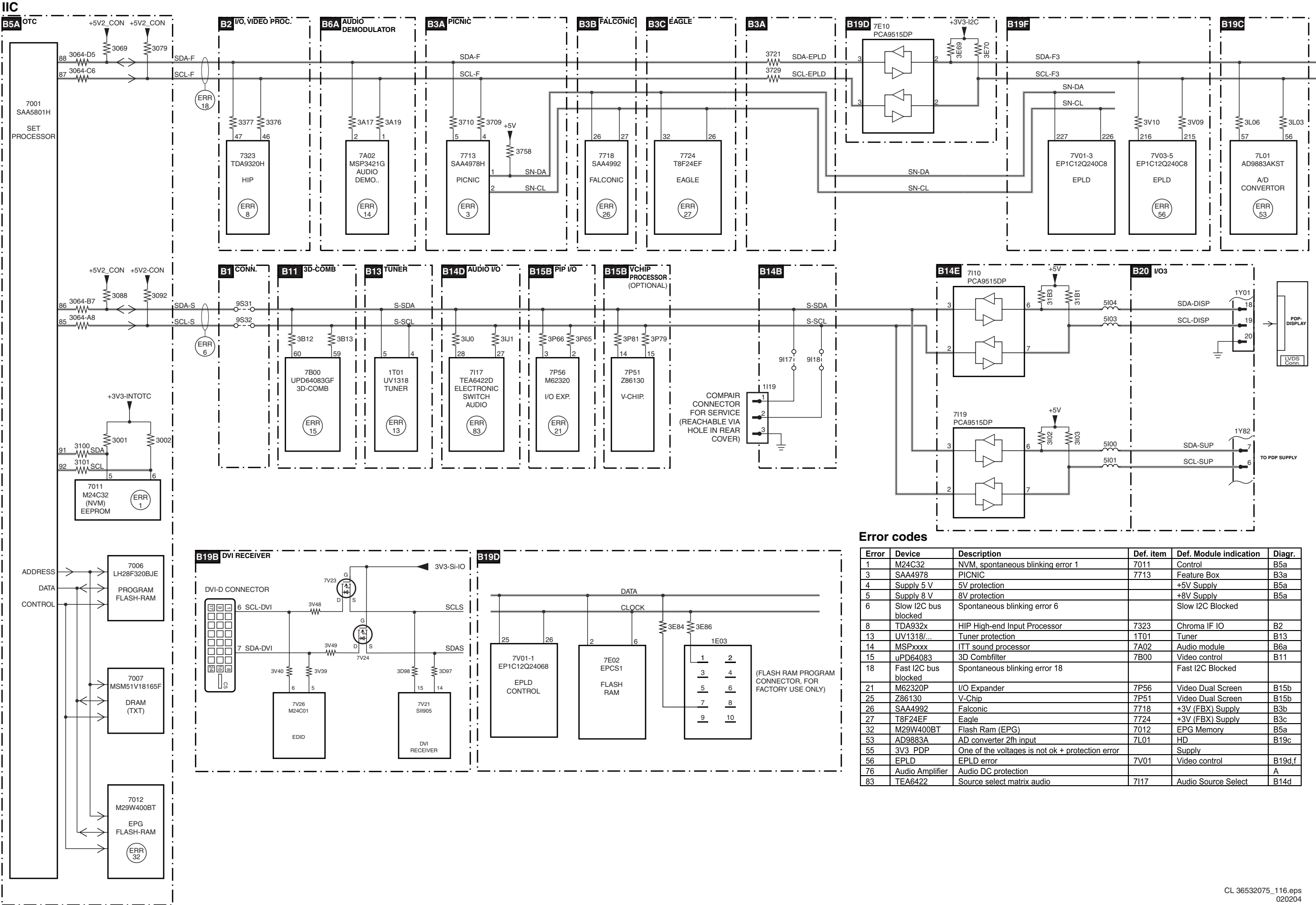
- CONTROL -



SUPPLY



I2C IC's overview

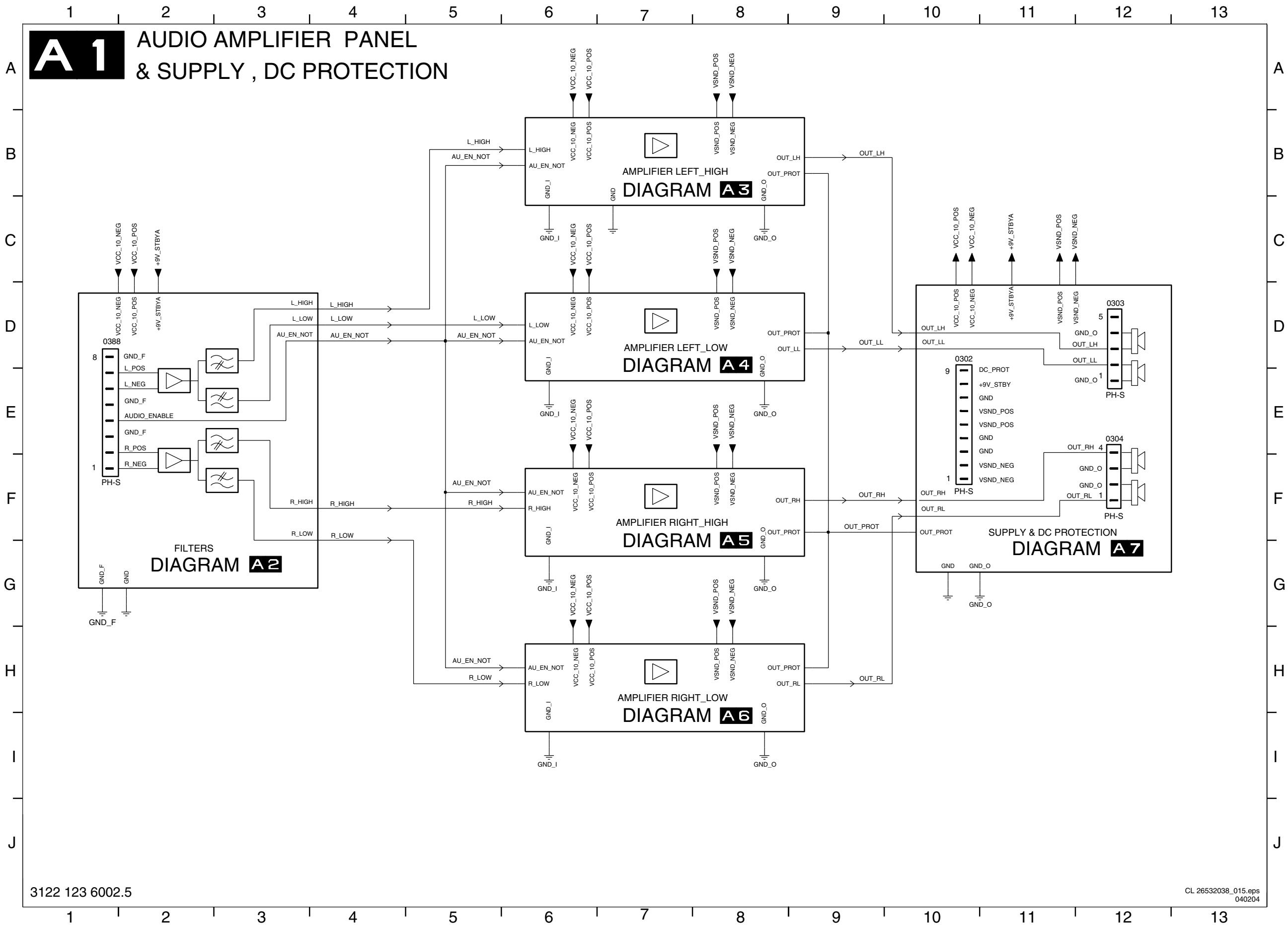


Error codes

Error	Device	Description	Def. item	Def. Module indication	Diagr.
1	M24C32	NVM, spontaneous blinking error 1	7011	Control	B5a
3	SAA4978	PICNIC	7713	Feature Box	B3a
4	Supply 5 V	5V protection		+5V Supply	B5a
5	Supply 8 V	8V protection		+8V Supply	B5a
6	Slow I2C bus blocked	Spontaneous blinking error 6		Slow I2C Blocked	
8	TDA932x	HIP High-end Input Processor	7323	Chroma IF IO	B2
13	UV1318/...	Tuner protection	1T01	Tuner	B13
14	MSPxxx	ITT sound processor	7A02	Audio module	B6a
15	uPD64083	3D Combfilter	7B00	Video control	B11
18	Fast I2C bus blocked	Spontaneous blinking error 18		Fast I2C Blocked	
21	M62320P	I/O Expander	7P56	Video Dual Screen	B15b
25	Z86130	V-Chip	7P51	Video Dual Screen	B15b
26	SAA4992	Falconic	7718	+3V (FBX) Supply	B3b
27	T8F24EF	Eagle	7724	+3V (FBX) Supply	B3c
32	M29W400BT	Flash Ram (EPG)	7012	EPG Memory	B5a
53	AD9883A	AD converter 2th input	7L01	HD	B19c
55	3V3_PDP	One of the voltages is not ok + protection error		Supply	
56	EPLD	EPLD error	7V01	Video control	B19d,f
76	Audio Amplifier	Audio DC protection			A
83	TEA6422	Source select matrix audio	7I17	Audio Source Select	B14d

7. Circuit Diagrams and PWB Layouts

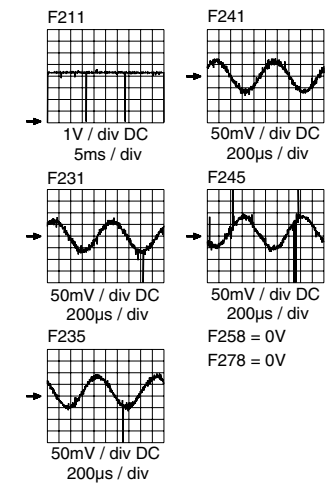
Audio Amplifier Panel and Supply, DC Protection



Filters

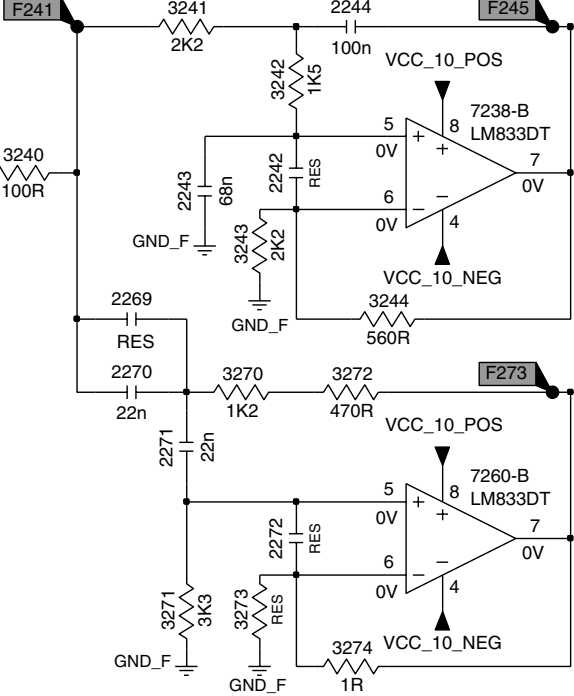
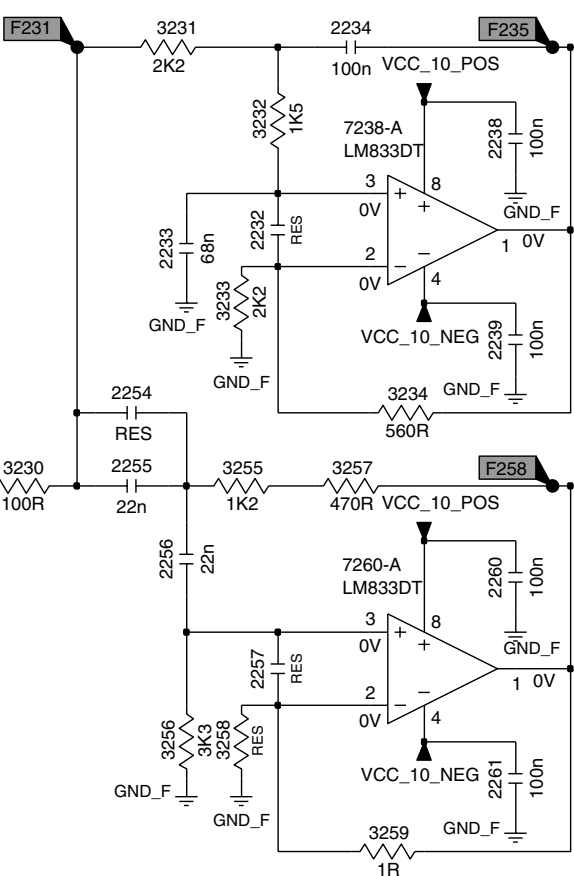
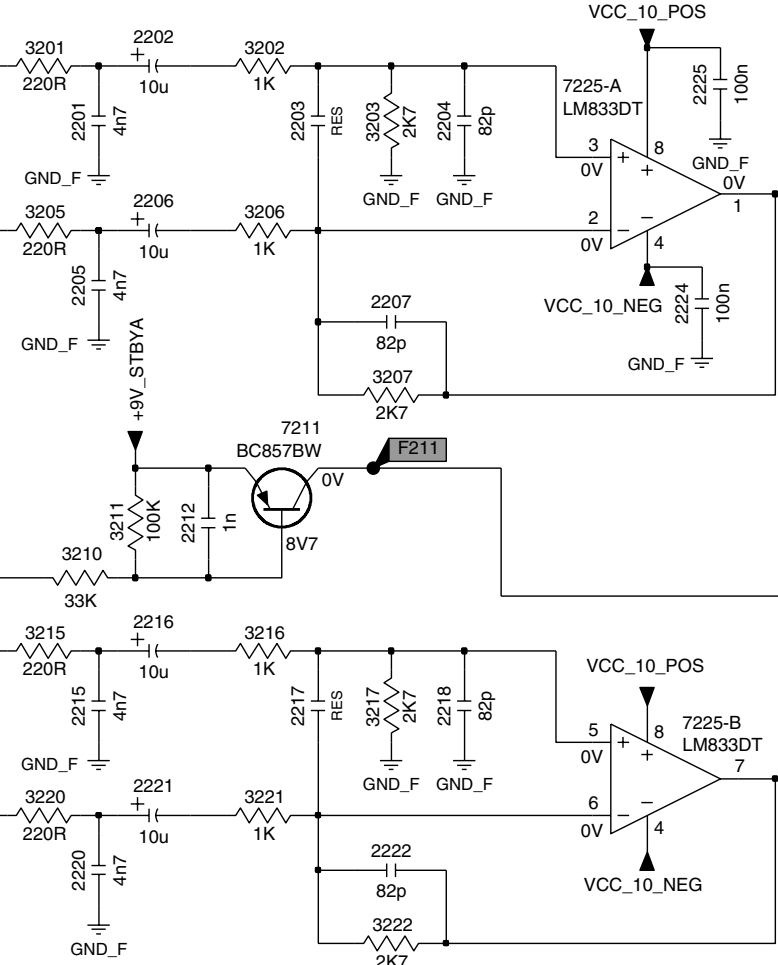
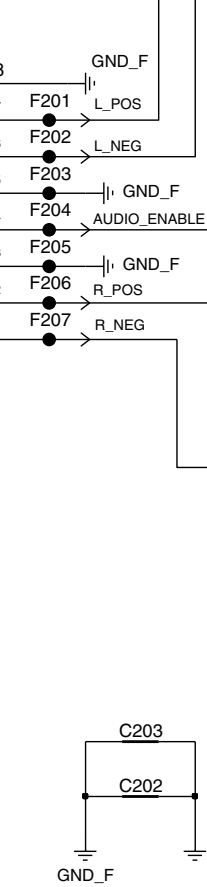
A2

FILTERS



TO 1Y88
B

- 0388 PH-S
- 8
- 7 F201
- 6 F202
- 5 F203
- 4 F204
- 3 F205
- 2 F206
- 1 F207



TO DIAGRAM
A4
AMPLIFIER
LEFT_LOW

TO DIAGRAM
A3
AMPLIFIER
LEFT_HIGH

TO DIAGRAM
A6
AMPLIFIER
RIGHT_LOW

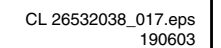
TO DIAGRAM
A5
AMPLIFIER
RIGHT_HIGH

- 0388 C1
- 2201 B3
- 2202 B3
- 2203 B4
- 2204 B4
- 2205 C3
- 2206 B3
- 2207 C4
- 2212 D3
- 2216 D3
- 2217 D4
- 2218 D4
- 2220 E3
- 2221 E3
- 2222 E4
- 2224 C5
- 2225 B5
- 2232 A7
- 2233 A6
- 2234 A7
- 2238 A7
- 2239 B7
- 2242 E7
- 2243 E6
- 2244 D7
- 2254 B6
- 2255 B6
- 2256 C6
- 2257 C7
- 2260 C7
- 2261 C7
- 2269 E6
- 2270 E6
- 2271 F6
- 2272 F7
- 3201 B3
- 3202 B3
- 3203 B4
- 3205 B3
- 3206 B3
- 3207 C4
- 3210 D3
- 3211 D3
- 3215 D3
- 3216 D3
- 3217 D4
- 3220 E3
- 3221 E3
- 3222 E4
- 3230 B6
- 3231 A6
- 3232 A7
- 3233 B6
- 3234 B7
- 3240 E6
- 3241 D6
- 3242 D7
- 3243 E6
- 3244 E7
- 3255 B6
- 3256 C6
- 3257 B7
- 3258 C6
- 3259 D7
- 3270 E6
- 3271 F6
- 3272 E7
- 3273 F6
- 3274 F7
- 7211 C4
- 7225-A B5
- 7225-B D5
- 7238-A A7
- 7238-B D7
- 7260-A C7
- 7260-B F7
- C202 F2
- C203 F2
- F201 C2
- F202 C2
- F203 D2
- F204 D2
- F205 D2
- F206 D2
- F207 D2
- F211 C4
- F231 A6
- F235 A8
- F241 D6
- F245 D8
- F258 B8
- F273 E8

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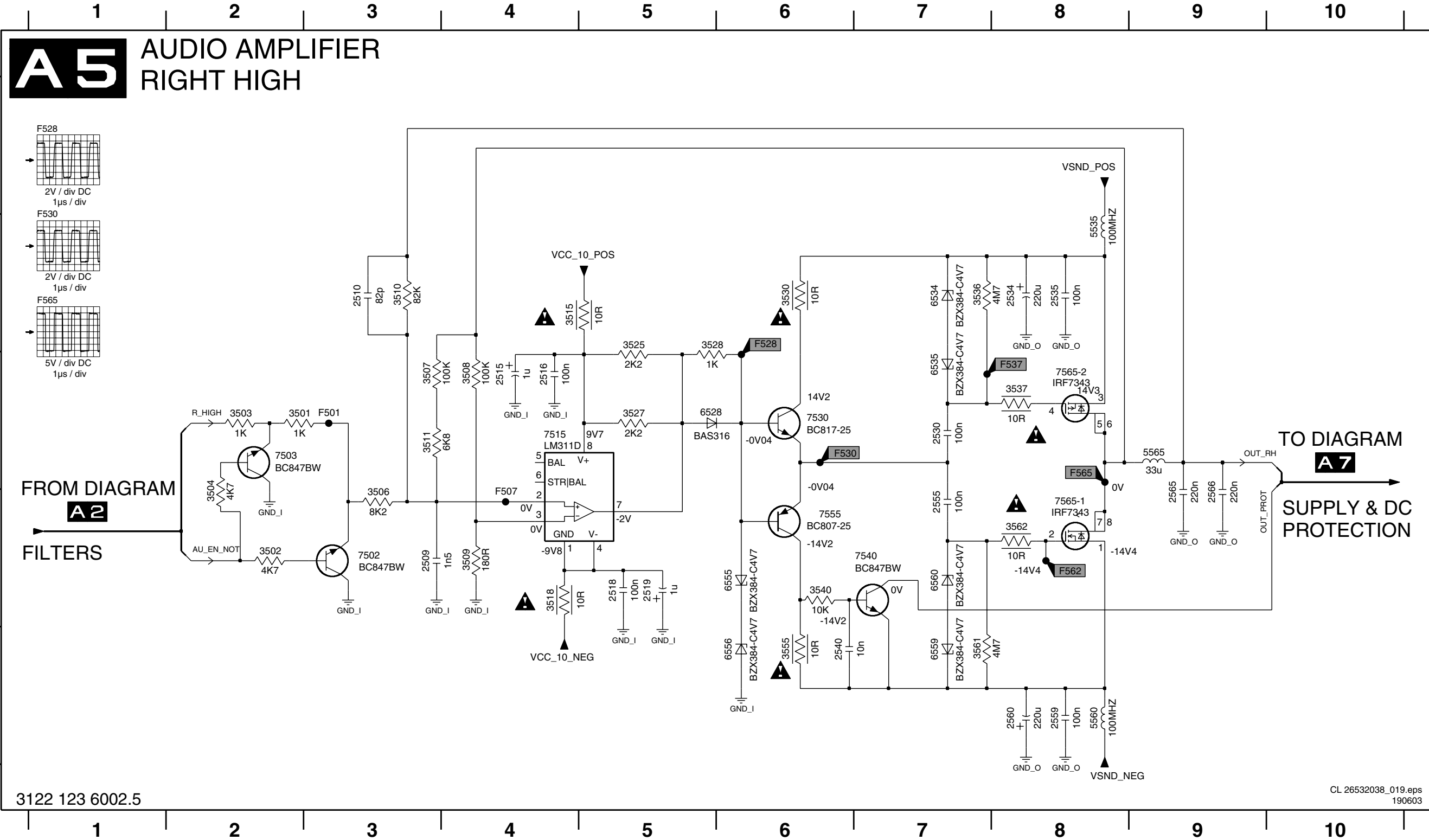
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2309 D4	2316 C5	2330 C7	2340 E7	2360 E8	3301 C3	3304 D2	3308 C4	3311 C4	3325 B5	3330 B6	3340 D6	3362 D8	5365 C9	6335 C7	6359 E7	7303 C3	7340 D7	7365-2 C8	F301 C3	F330 C7	F365 C8
2310 B3	2318 D5	2334 B8	2355 D7	2365 C9	3302 D3	3306 C3	3309 D4	3315 B5	3327 C5	3336 B8	3355 E6	5335 B8	6328 C6	6355 D6	6360 D7	7315 C4	7355 D6	C301 E3	F307 C4	F337 C8	
2315 C4	2319 D5	2335 B8	2359 E8	2366 C9	3303 C2	3307 C4	3310 B3	3318 D5	3328 B6	3337 C8	3361 E8	5360 E8	6334 B7	6356 E6	7302 D3	7330 C6	7365-1 D8	C302 E3	F328 B6	F362 D8	



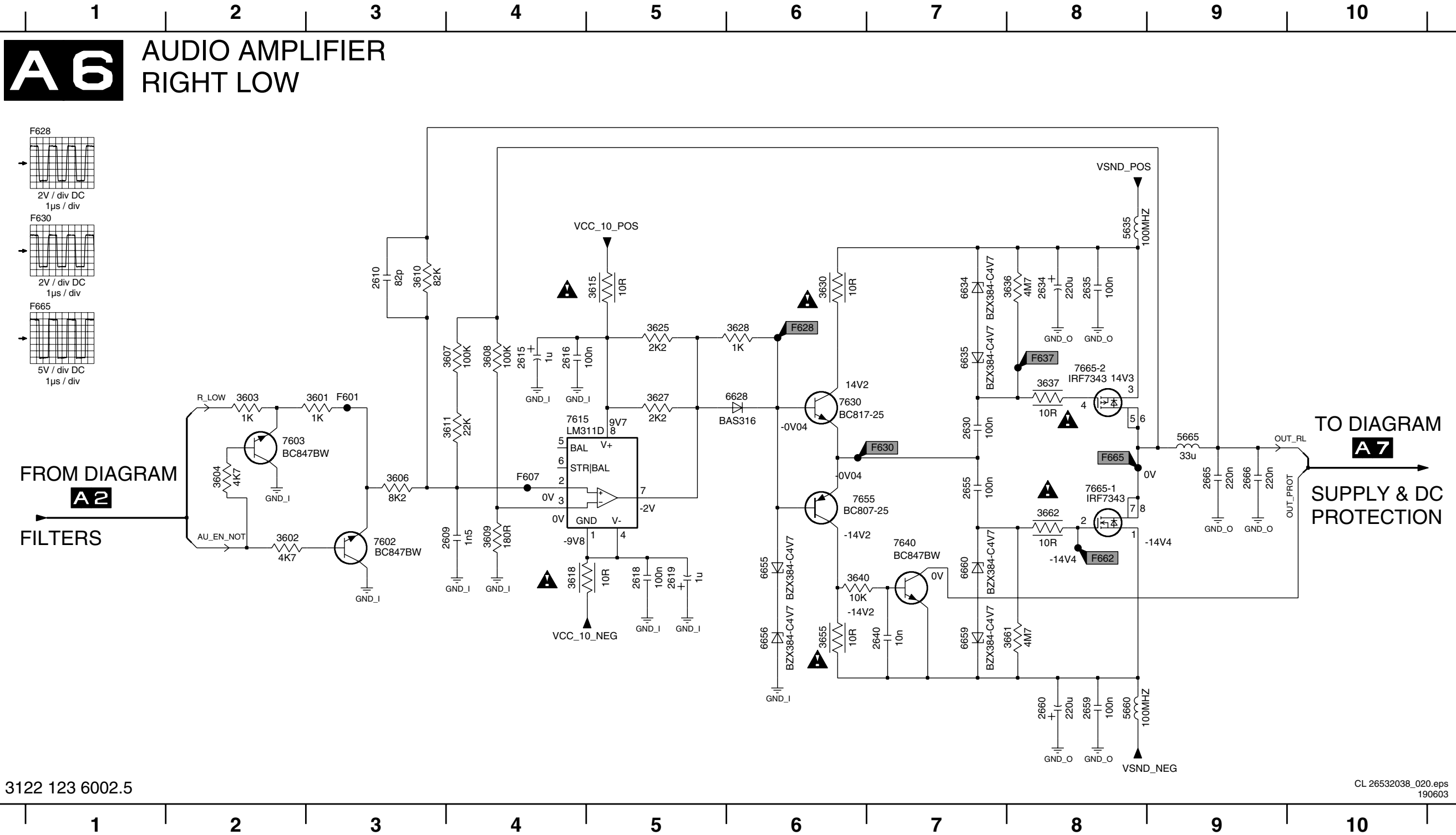
Audio Amplifier Right High

2509 D3	2516 C4	2530 C7	2540 E6	2560 E8	3501 C2	3504 D2	3508 C4	3511 C3	3525 B5	3530 B6	3540 D6	3562 D8	5565 C9	6535 C7	6559 E7	7503 C2	7540 D7	7565-2 C8	F528 B6	F562 D8
2510 B3	2518 D5	2534 B8	2555 D7	2565 D9	3502 D2	3506 D3	3509 D4	3515 B4	3527 C5	3536 B7	3555 E6	5535 B8	6528 C5	6555 D6	6560 D7	7515 C4	7555 D6	F501 C3	F530 C6	F565 C8
2515 C4	2519 D5	2535 B8	2559 E8	2566 D9	3503 C2	3507 C3	3510 B3	3518 D4	3528 B5	3537 C8	3561 E7	5560 E8	6534 B7	6556 E6	7502 D3	7530 C6	7565-1 D8	F507 D4	F537 C8	



Audio Amplifier Right Low

2609 D4	2616 C4	2630 C7	2640 E7	2660 E8	3601 C3	3604 C2	3608 C4	3611 C4	3625 B5	3630 B6	3640 D6	3662 D8	5665 C9	6635 C7	6659 E7	7603 C2	7640 D7	7665-2 C8	F628 B6	F662 D8
2610 B3	2618 D5	2634 B8	2655 C7	2665 C9	3602 D2	3606 C3	3609 D4	3615 B5	3627 C5	3636 B8	3655 E6	5635 B8	6628 C6	6655 D6	6660 D7	7615 C4	7655 D6	F601 C3	F630 C7	F665 C8
2615 C4	2619 D5	2635 B8	2659 E8	2666 C9	3603 C2	3607 C4	3610 B3	3618 D4	3628 B6	3637 C8	3661 E8	5660 E8	6634 B7	6656 E6	7602 D3	7630 C6	7665-1 D8	F607 C4	F637 C8	



Supply & DC Protection

A7

SUPPLY & DC PROTECTION

DC PROTECTION

F730 = 14V4
F735 = 9V
F740 = -14V4
F745 = -8V8

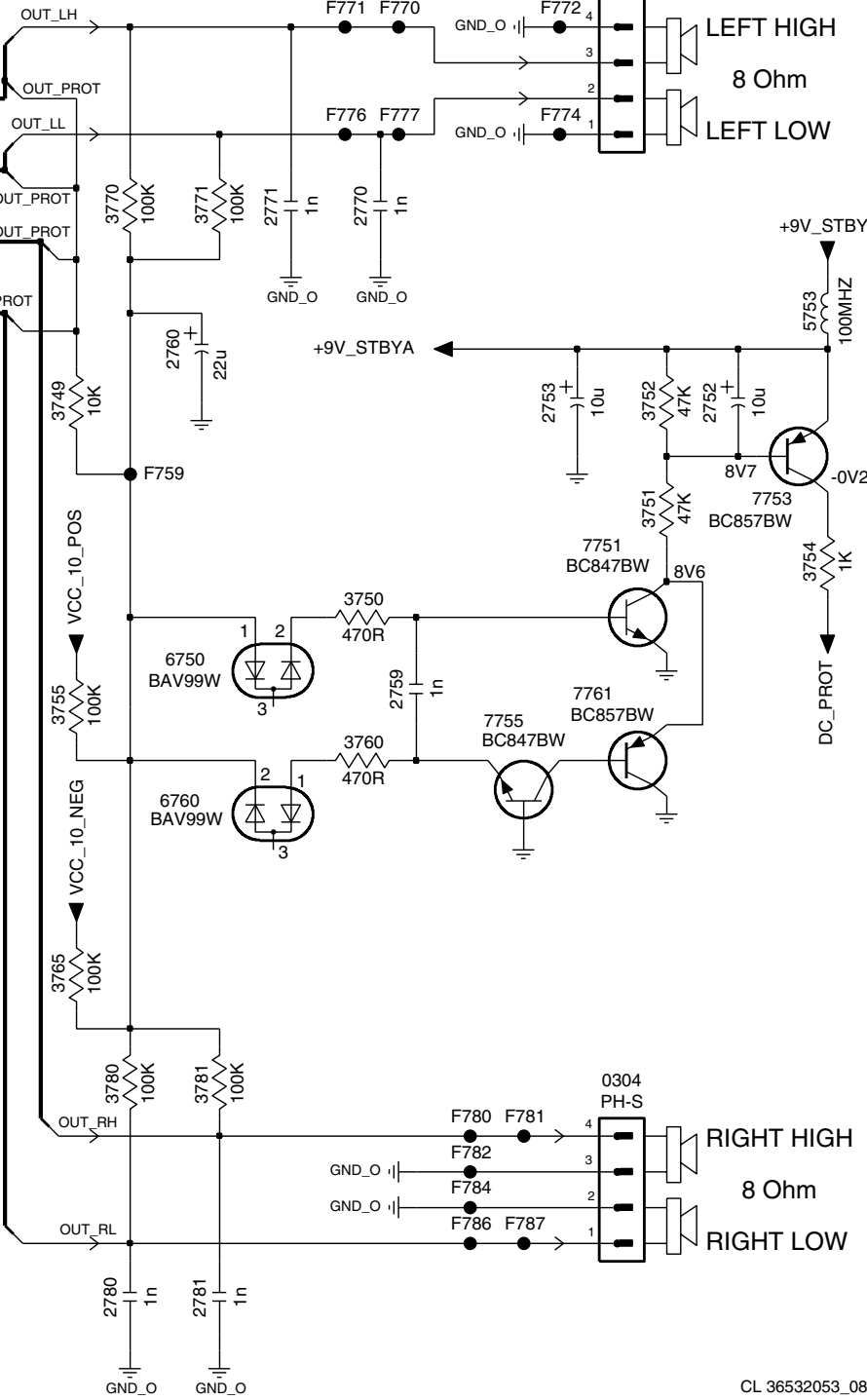
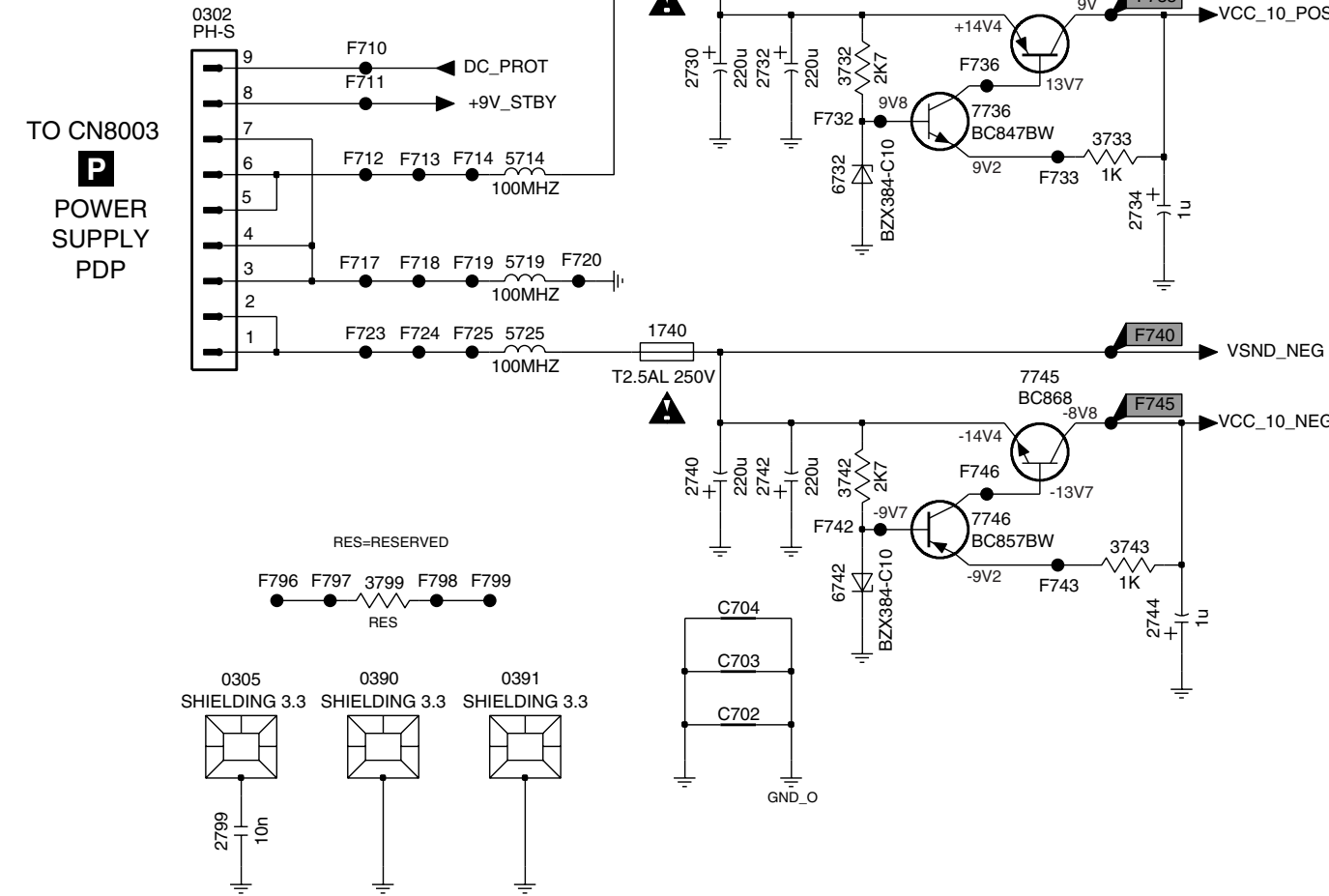
FROM DIAGRAM **A3** AUDIO AMPLIFIER LEFT HIGH

FROM DIAGRAM **A4** AUDIO AMPLIFIER LEFT LOW

FROM DIAGRAM **A5** AUDIO AMPLIFIER RIGHT HIGH

FROM DIAGRAM **A6** AUDIO AMPLIFIER RIGHT LOW

SUPPLY



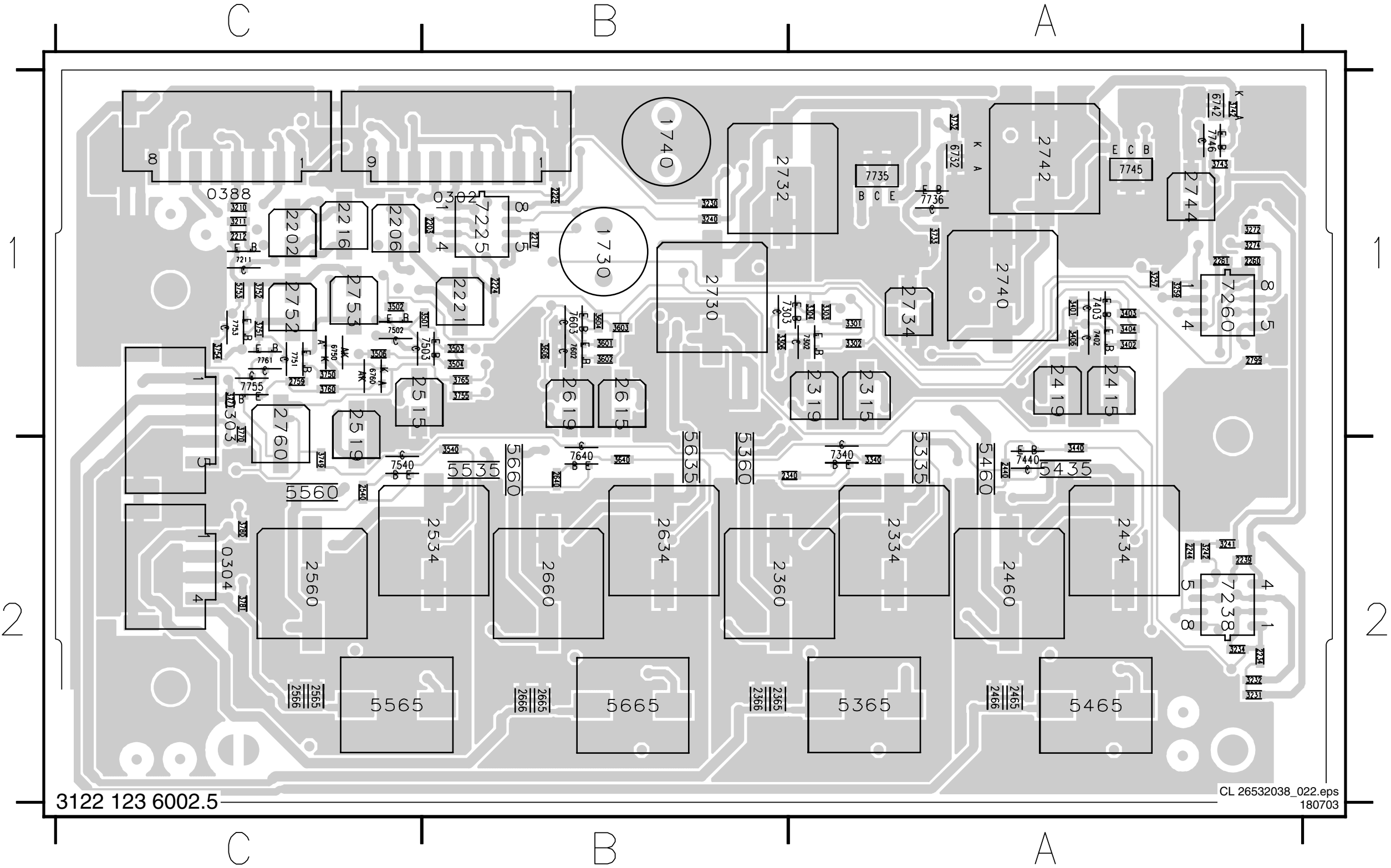
- 0302 C1
- 0303 A8
- 0304 E8
- 0305 E1
- 0390 E2
- 0391 E3
- 1730 B3
- 1740 D3
- 2730 C3
- 2732 C4
- 2734 D5
- 2740 E3
- 2742 E4
- 2744 E5
- 2752 C9
- 2753 C8
- 2759 D8
- 2760 B7
- 2770 B8
- 2771 B7
- 2780 F7
- 2781 F7
- 2799 F1
- 3732 C4
- 3733 C5
- 3742 E4
- 3743 E5
- 3749 C6
- 3750 C8
- 3751 C9
- 3752 C9
- 3754 C9
- 3755 D6
- 3760 D8
- 3765 E6
- 3770 B7
- 3771 B7
- 3780 E7
- 3781 E7
- 3799 E2
- 5714 C3
- 5719 D3
- 5725 D3
- 5753 B9
- 6732 C4
- 6742 E4
- 6750 D7
- 6760 D7
- 7735 C5
- 7736 C4
- 7745 D5
- 7746 E4
- 7751 C8
- 7753 C9
- 7755 D8
- 7761 D9
- C702 F3
- C703 E3
- C704 E3
- F710 C2
- F711 C2
- F712 C2
- F713 C2
- F714 C2
- F717 D2
- F718 D2
- F719 D2
- F720 D3
- F723 D2
- F724 D2
- F725 D2
- F730 B5
- F732 C4
- F733 C5
- F735 C5
- F736 C4
- F740 D5
- F742 E4
- F743 E5
- F745 D5
- F746 E4
- F759 C7
- F770 A8
- F771 A8
- F772 A8
- F774 A8
- F776 A8
- F777 A8
- F780 E8
- F781 E8
- F782 F8
- F784 F8
- F786 F8
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- F796 E2
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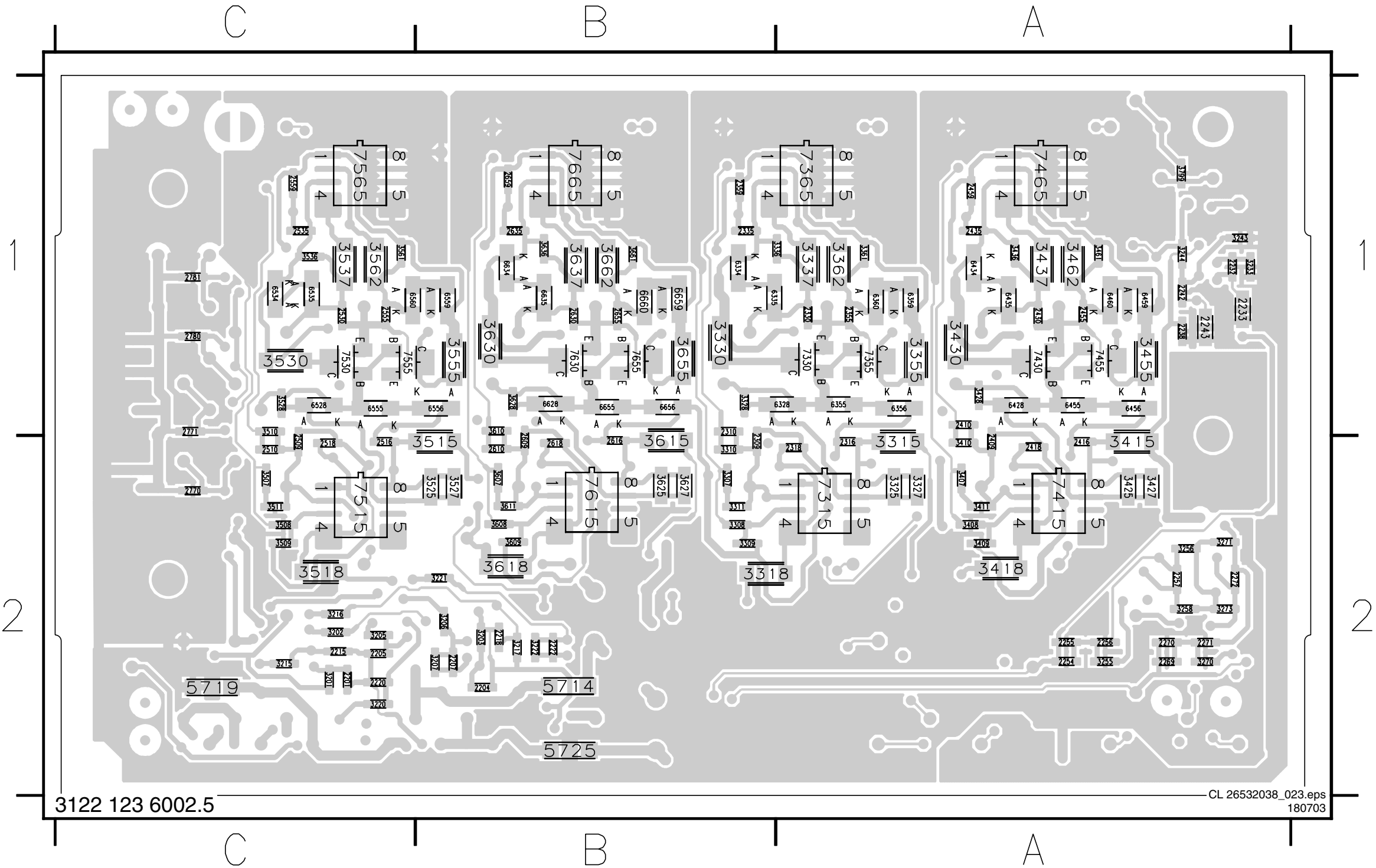
Layout Audio Panel (Top Side)

0302 B1	2216 C1	2315 A1	2440 A2	2566 C2	2734 A1	3211 C1	3272 A1	3403 A1	3601 B1	3749 C2	3780 C2	5565 C2	7225 B1	7503 B1	7753 C1
0303 C1	2217 B1	2319 A1	2460 A2	2615 B1	2740 A1	3230 B1	3274 A1	3404 A1	3602 B1	3750 C1	3781 C2	5635 B2	7238 A2	7540 C2	7755 C1
0304 C2	2221 B1	2334 A2	2465 A2	2619 B1	2742 A1	3231 A2	3301 A1	3406 A1	3603 B1	3751 C1	5335 A2	5660 B2	7260 A1	7602 B1	7761 C1
0388 C1	2224 B1	2340 A2	2466 A2	2634 B2	2744 A1	3232 A2	3302 A1	3440 A2	3604 B1	3752 C1	5360 B2	5665 B2	7302 A1	7603 B1	
1730 B1	2225 B1	2360 B2	2515 C1	2640 B2	2752 C1	3234 A2	3303 A1	3501 B1	3606 B1	3754 C1	5365 A2	5753 C1	7303 B1	7640 B2	
1740 B1	2234 A2	2365 B2	2519 C1	2660 B2	2753 C1	3240 B1	3304 A1	3502 C1	3640 B2	3755 B1	5435 A2	6732 A1	7340 A2	7735 A1	
2202 C1	2239 A2	2366 B2	2534 B2	2665 B2	2759 C1	3241 A2	3306 B1	3503 B1	3732 A1	3760 C1	5460 A2	6742 A1	7402 A1	7736 A1	
2203 B1	2244 A2	2415 A1	2540 C2	2666 B2	2760 C1	3242 A2	3340 A2	3504 B1	3733 A1	3765 B1	5465 A2	6750 C1	7403 A1	7745 A1	
2206 C1	2260 A1	2419 A1	2560 C2	2730 B1	2799 A1	3257 A1	3401 A1	3506 C1	3742 A1	3770 C1	5535 B2	6760 C1	7440 A2	7746 A1	
2212 C1	2261 A1	2434 A2	2565 C2	2732 B1	3210 C1	3259 A1	3402 A1	3540 B2	3743 A1	3771 C1	5560 C2	7211 C1	7502 C1	7751 C1	

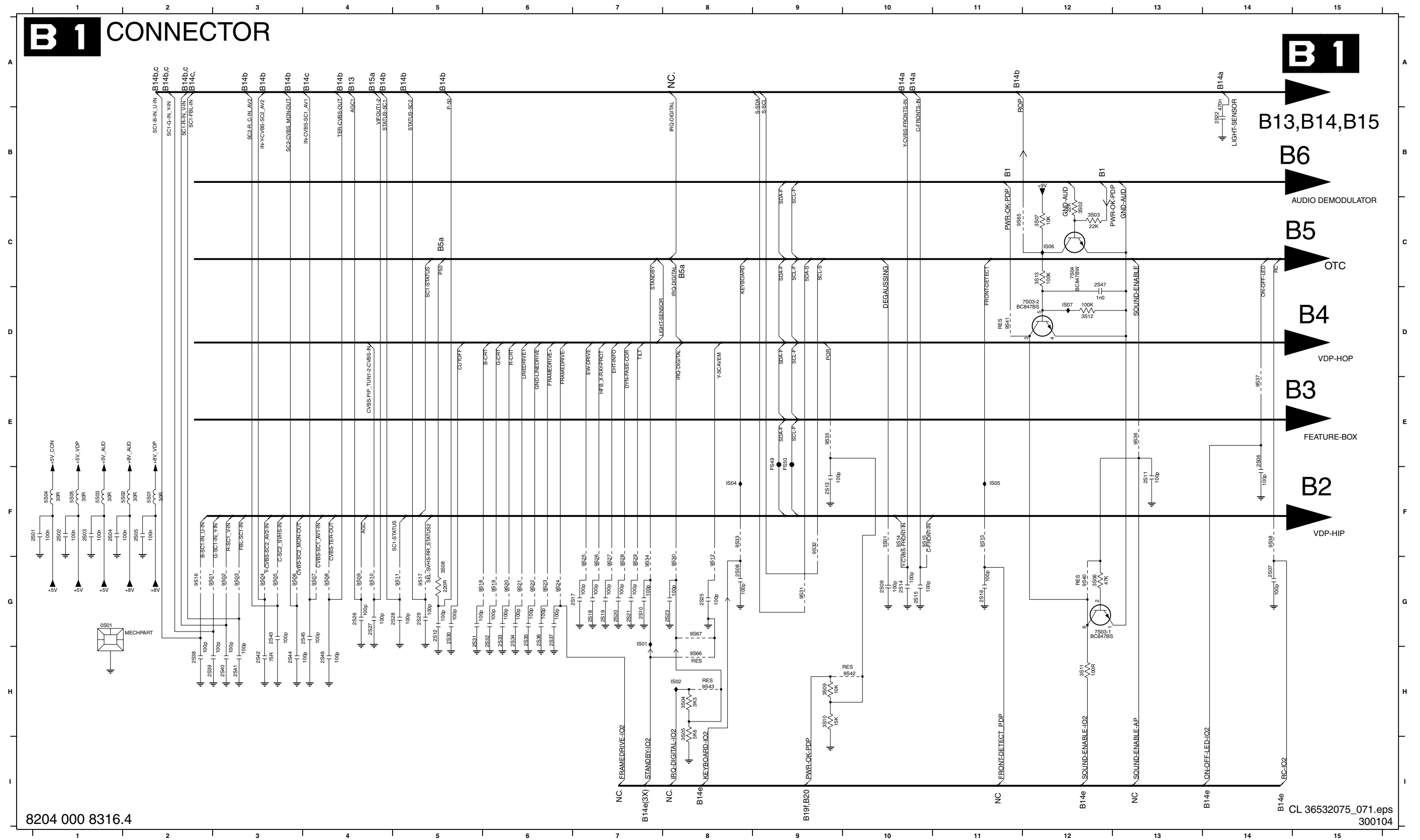


Layout Audio Panel (Bottom Side)

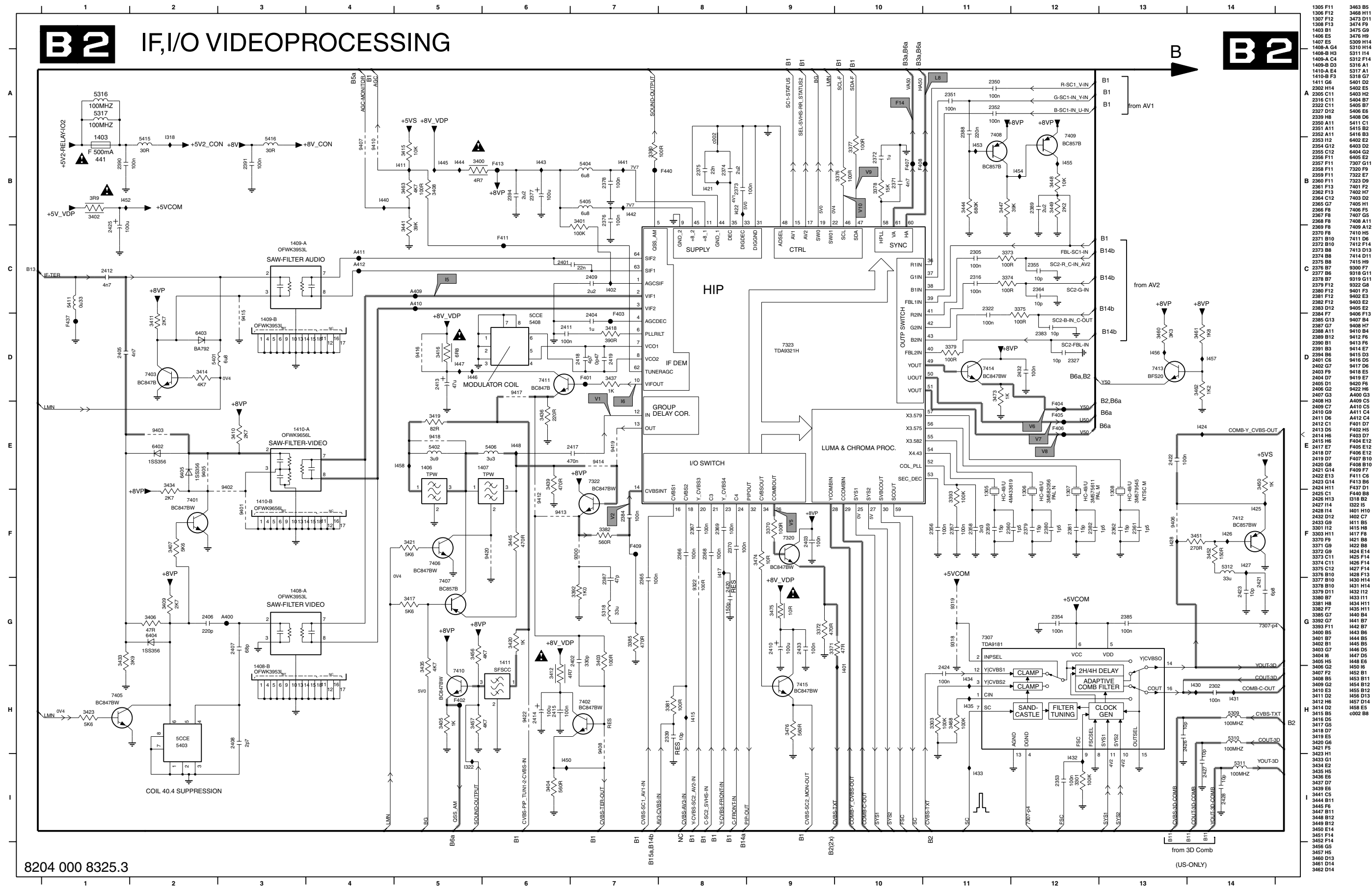
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2204 B2	2256 A2	2409 A2	2555 C1	3201 C2	3244 A1	3325 A2	3415 A2	3510 C1	3608 B2	3662 B1	6435 A1	6635 B1	7530 C1
2205 C2	2257 A2	2410 A1	2559 C1	3202 C2	3255 A2	3327 A2	3418 A2	3511 C2	3609 B2	3799 A1	6455 A1	6655 B1	7555 C1
2207 B2	2269 A2	2416 A2	2609 B2	3203 B2	3256 A2	3328 B1	3425 A2	3515 B2	3610 B1	5714 B2	6456 A1	6656 B1	7565 C1
2215 C2	2270 A2	2418 A2	2610 B2	3205 C2	3258 A2	3330 B1	3427 A2	3518 C2	3611 B2	5719 C2	6459 A1	6659 B1	7615 B2
2218 B2	2271 A2	2430 A1	2616 B2	3206 B2	3270 A2	3336 A1	3428 A1	3525 B2	3615 B2	5725 B2	6460 A1	6660 B1	7630 B1
2220 C2	2272 A2	2435 A1	2618 B2	3207 B2	3271 A2	3337 A1	3430 A1	3527 B2	3618 B2	6328 A1	6528 C1	7315 A2	7655 B1
2222 B2	2309 B2	2455 A1	2630 B1	3215 C2	3273 A2	3355 A1	3436 A1	3528 C1	3625 B2	6334 B1	6534 C1	7330 A1	7665 B1
2232 A1	2310 B1	2459 A1	2635 B1	3216 C2	3307 B2	3361 A1	3437 A1	3530 C1	3627 B2	6335 B1	6535 C1	7355 A1	
2233 A1	2316 A2	2509 C2	2655 B1	3217 B2	3308 B2	3362 A1	3455 A1	3536 C1	3628 B1	6355 A1	6555 C1	7365 A1	
2238 A1	2318 A2	2510 C2	2659 B1	3220 C2	3309 B2	3407 A2	3461 A1	3537 C1	3630 B1	6356 A1	6556 B1	7415 A2	
2242 A1	2330 A1	2516 C2	2770 C2	3221 B2	3310 B2	3408 A2	3462 A1	3555 B1	3636 B1	6359 A1	6559 B1	7430 A1	
2243 A1	2335 B1	2518 C2	2771 C1	3222 B2	3311 B2	3409 A2	3507 C2	3561 C1	3637 B1	6360 A1	6560 C1	7455 A1	
2254 A2	2355 A1	2530 C1	2780 C1	3233 A1	3315 A2	3410 A2	3508 C2	3562 C1	3655 B1	6428 A1	6628 B1	7465 A1	



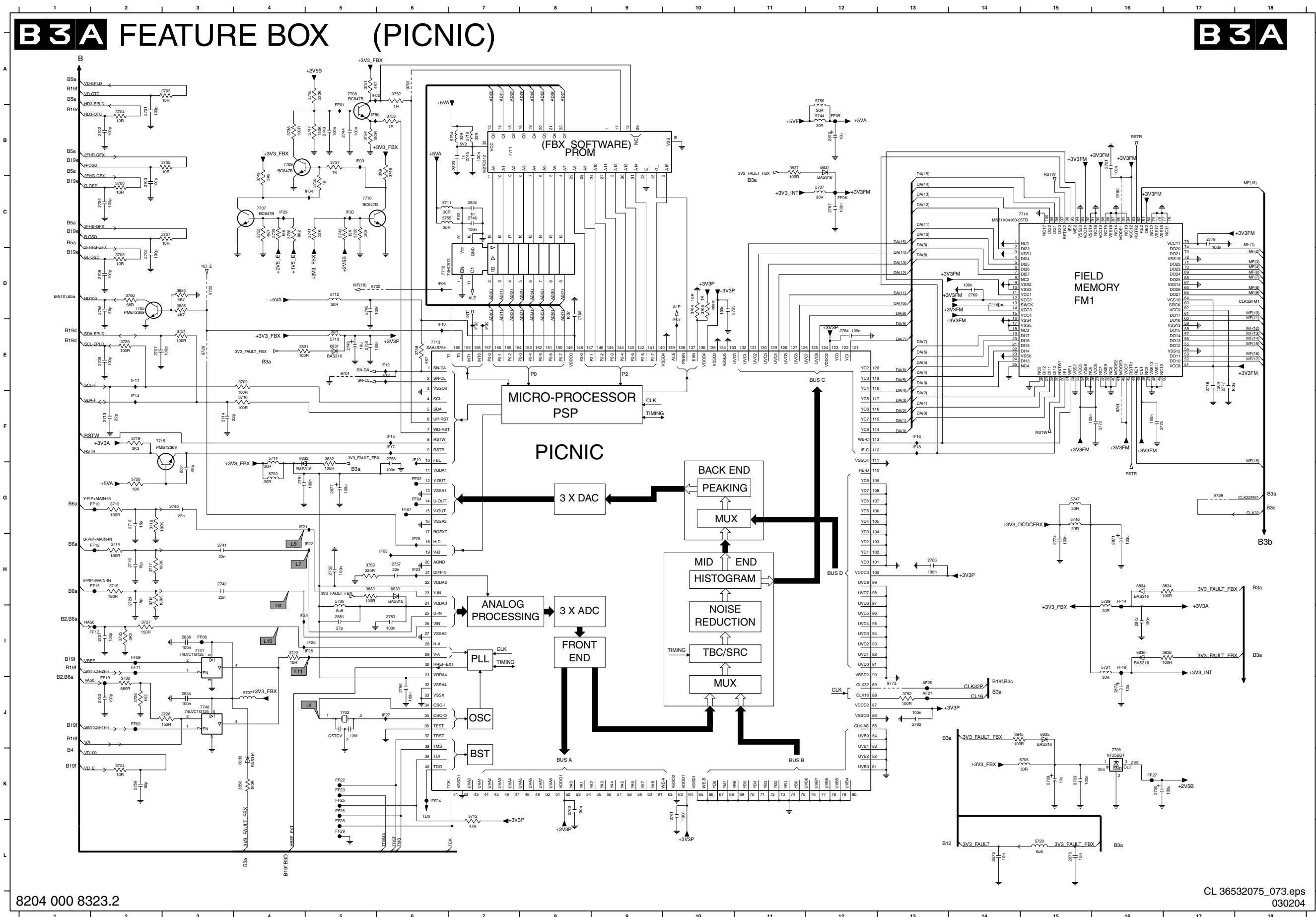
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2S01 F1	2S06 E14	2S11 F13	2S16 G11	2S21 G7	2S27 G4	2S32 G6	2S37 G6	2S42 H3	2S47 C12	3S05 H8	3S10 H9	5S02 F2	7S03-2 D12	9S04 G3	9S09 G4	9S14 F10	9S19 G6	9S24 G6	9S29 G7	9S34 F7	9S40 G12	9S66 H8	IS02 H8	
2S02 F1	2S07 G14	2S12 G5	2S17 G7	2S22 B14	2S28 G5	2S33 G6	2S38 H2	2S43 G3	3S01 F10	3S06 G12	3S11 H12	5S03 F1	7S04 C12	9S05 G3	9S10 G4	9S15 F10	9S20 G6	9S25 G7	9S30 G8	9S35 E9	9S41 D11	9S67 G8	IS04 F8	
2S03 F1	2S08 G8	2S13 F9	2S18 G7	2S23 G8	2S29 G5	2S34 G6	2S39 H2	2S44 H3	3S02 C12	3S07 C12	3S12 D12	5S04 F1	9S01 G2	9S06 G3	9S11 G5	9S16 G2	9S21 G6	9S26 G7	9S31 G9	9S36 E13	9S42 H10	F549 E9	IS06 F11	
2S04 F1	2S09 G10	2S14 G10	2S19 G7	2S25 G8	2S30 G5	2S35 G6	2S40 H3	2S45 G4	3S03 C12	3S08 G5	3S13 C12	5S05 F1	9S02 G3	9S07 G4	9S12 G8	9S17 G5	9S22 G6	9S27 G7	9S32 F9	9S37 E14	9S43 H8	F550 E9	IS06 C12	



Small Signal Panel: IF, I/O Videoprocessing



Small Signal Panel: Feature Box (PICNIC)

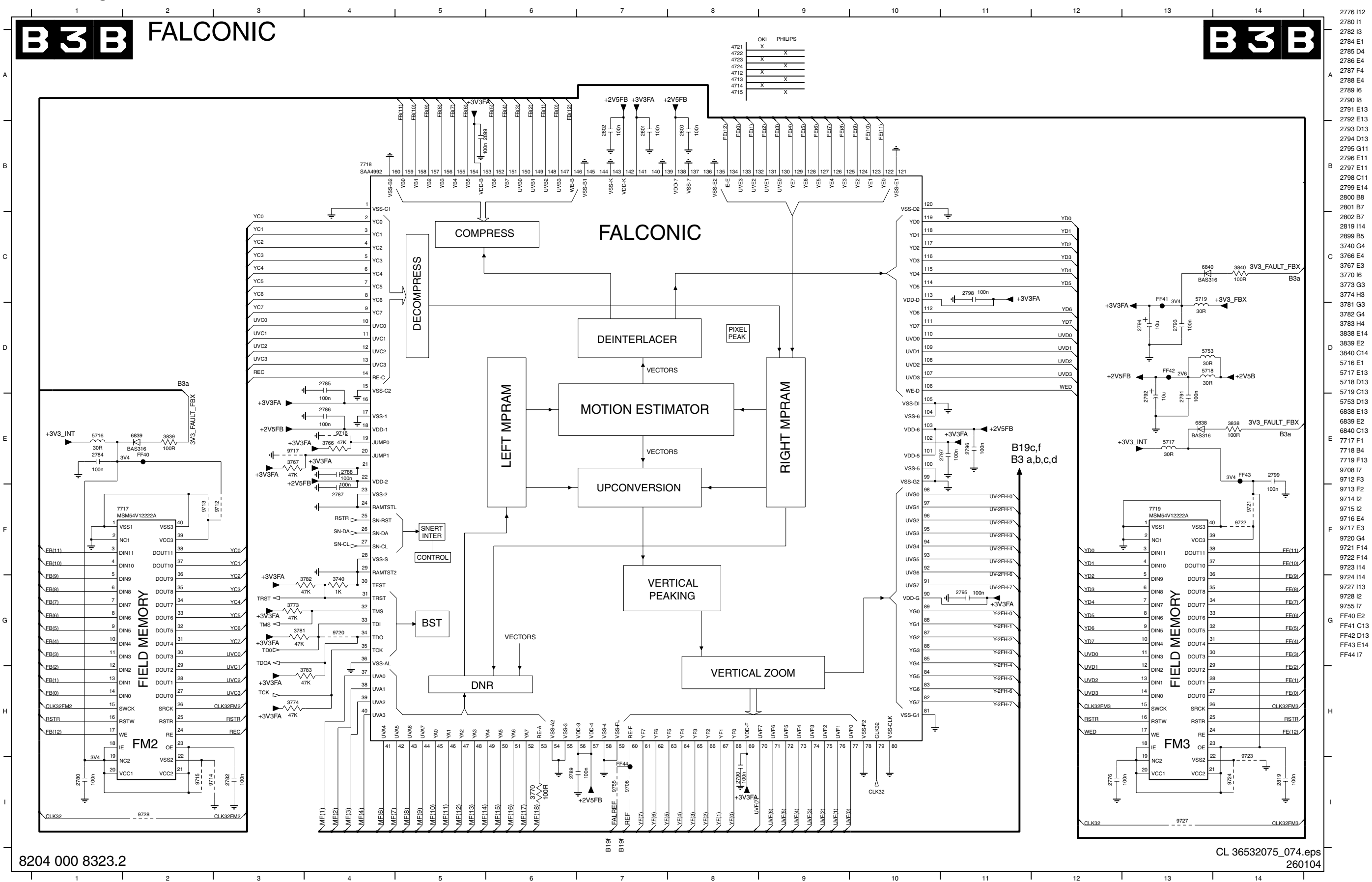


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1702 J5	3834 H17
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2702 B2	3836 I17
2703 C2	3837 B11
2704 C2	3845 J14
2705 D2	3850 K4
2706 D2	3854 D3
2707 E2	5703 G4
2708 E2	5706 K15
2713 F2	5707 J4
2714 F3	5710 B7
2718 G2	5711 C6
2719 H2	5712 D5
2720 H2	5713 E5
2721 I2	5714 F4
2722 J2	5720 L15
2728 K15	5729 H16
2729 K15	5731 H6
2730 K16	5736 H5
2740 G3	5737 C12
2741 H3	5744 B12
2742 H3	5746 G15
2743 B5	5747 G15
2744 B5	5754 B7
2745 B7	5755 C6
2746 C7	5756 A12
2748 D5	6830 K4
2749 E5	6831 E5
2750 E5	6832 F4
2751 G4	6833 H6
2752 H5	6834 H16
2753 H6	6835 J15
2755 F6	6836 H6
2756 J6	6837 B12
2757 H6	7705 D2
2758 D2	7706 K16
2759 K2	7707 C4
2760 K8	7708 A5
2761 K10	7709 B4
2762 J13	7710 C5
2763 H13	7711 B7
2764 E12	7712 D6
2765 D10	7713 E6
2766 D6	7714 C15
2767 C12	7715 F2
2768 D14	7740 J3
2773 F16	7741 I3
2774 H15	9700 A6
2775 F16	9701 E5
2777 E17	9702 D5
2778 E17	9725 D3
2779 C17	9726 E3
2781 B16	9729 G17
2823 B7	9760 C16
2824 C7	9761 F16
2831 G3	9772 J13
2834 J3	AF20 J13
2836 I3	AF21 J13
2870 B12	FF01 B5
2871 H16	FF02 G6
2872 I16	FF03 J2
2874 J16	FF04 G6
2875 L15	FF05 B12
2876 L14	FF06 C12
2877 G5	FF07 G6
2881 I5	FF08 I3
3703 A3	FF09 I2
3704 B2	FF10 G2
3705 B3	FF11 I2
3706 C2	FF12 H2
3707 C3	FF14 H16
3708 D2	FF15 H2
3709 E4	FF17 I2
3710 F4	FF18 H6
3712 K7	FF19 J2
3713 G2	FF22 K5
3714 H2	FF23 K5
3715 H2	FF24 K6
3716 G2	FF25 K5
3717 H2	FF26 K5
3718 H2	FF27 K16
3719 F2	FF28 L5
3720 G2	FF29 L5
3721 E3	IF02 A5
3722 I4	IF03 B5
3724 K2	IF04 C5
3725 I2	IF05 H6
3726 J2	IF06 D6
3727 I2	IF07 E10
3728 J3	IF08 E7
3729 E2	IF09 E7
3730 J2	IF10 E6
3736 B4	IF11 E2
3737 B5	IF12 E6
3738 C5	IF13 E6
3739 C4	IF14 F2
3741 C5	IF15 F6
3743 C5	IF16 F13
3746 B6	IF17 F6
3747 B5	IF18 F13
3748 A5	IF19 F6
3749 C4	IF21 G4
3750 C5	IF22 H5
3751 A5	IF23 H6
3752 A6	IF24 I4
3753 B6	IF25 I5
3754 B5	IF26 I5
3755 C4	IF27 I6
3756 C4	IF28 H6
3758 E6	IF29 C4
3759 H5	IF30 C5
3760 D2	IF80 B5
3762 J13	
3764 D10	
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3831 E4	
3832 F5	
3833 H5	

Small Signal Panel: Falconic

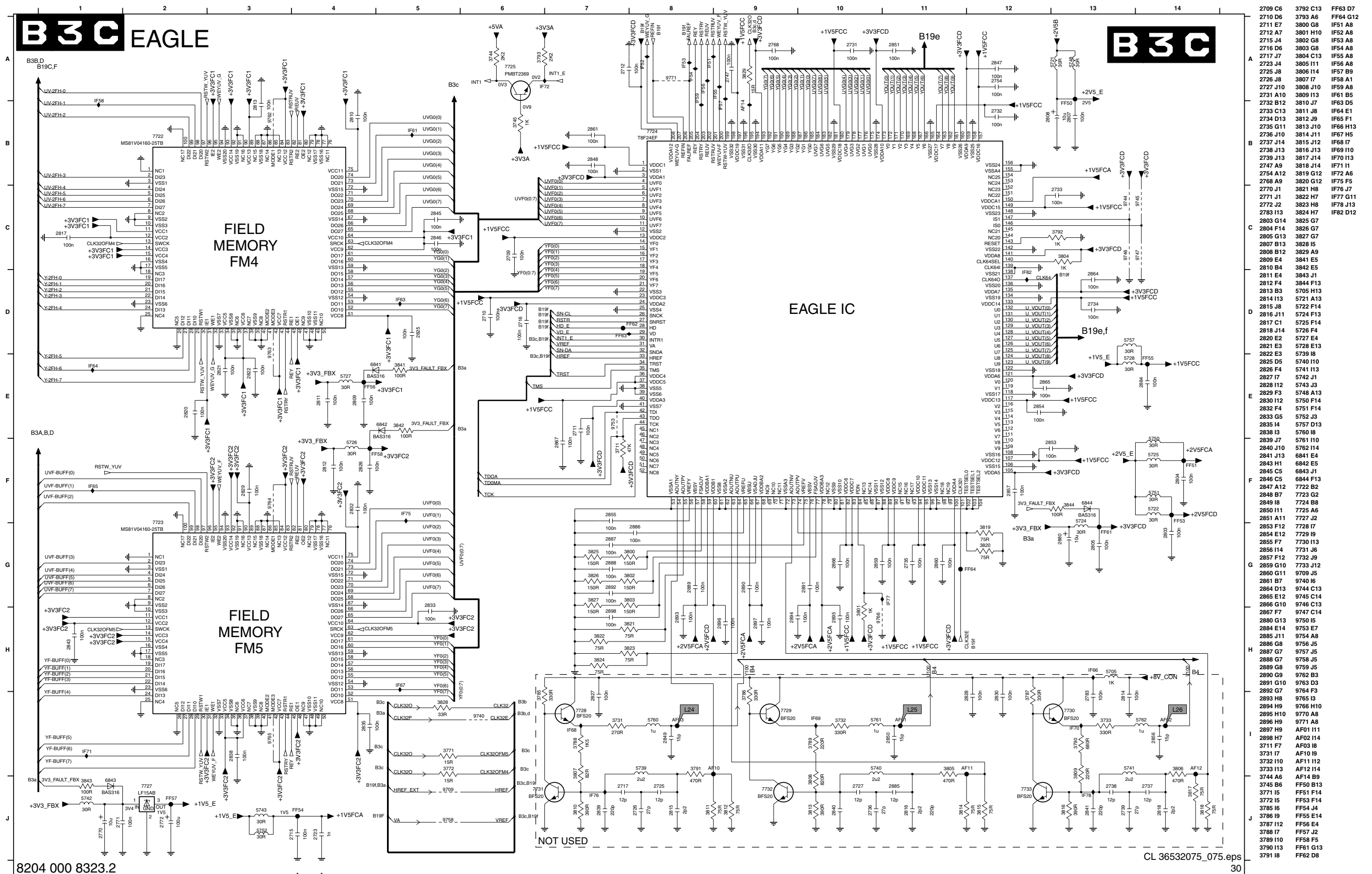


	OKI	PHILIPS
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4723	X	X
4724		X
4712	X	X
4713		X
4714	X	
4715		X

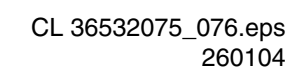
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Small Signal Panel: Eagle

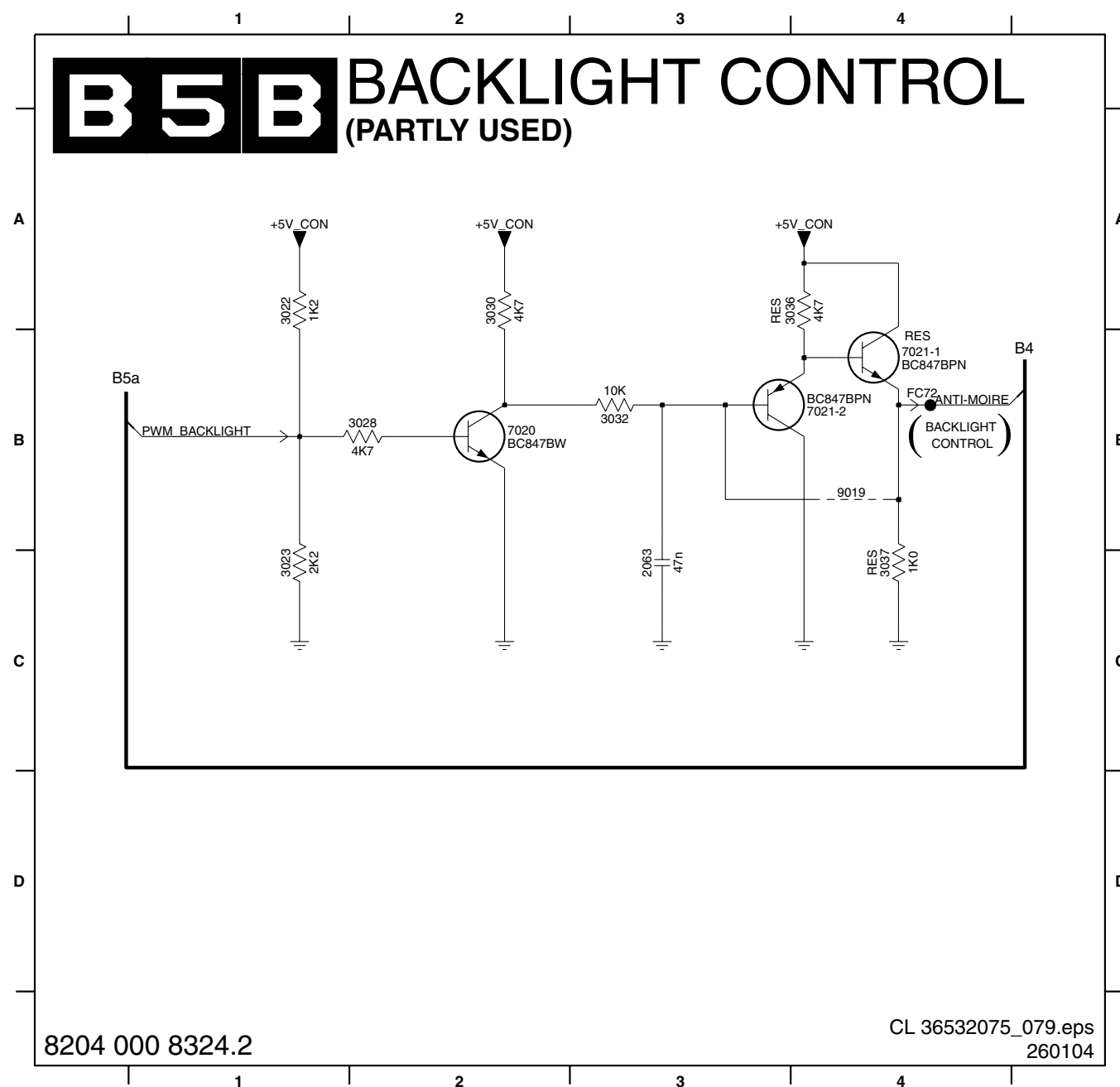


2724 E2	2842 A6	2858 E5	3700 A2	3723 C5	3796 E3	3799 E4	3848 F6	3852 E3	3856 F1	5702 D5	6846 E3	7743 A5	7746 E5	9703 E4	9737 A5	9742 C2	9749 C5	FF75 A2
2806 F2	2844 C3	2862 E5	3701 A5	3794 E1	3797 F3	3846 F4	3849 F6	3853 A6	5700 D2	5715 A6	6847 A6	7744 C3	7747 E2	9707 E4	9738 A2	9743 C5	FF71 A6	FF76 A5
2837 A3	2852 C6	2863 E5	3702 C2	3795 F1	3798 E4	3847 F4	3851 D6	3855 F5	5701 E4	6845 D6	7742 A3	7745 C5	7748 F2	9736 A2	9739 A5	9748 C2	FF74 C2	FF77 C5

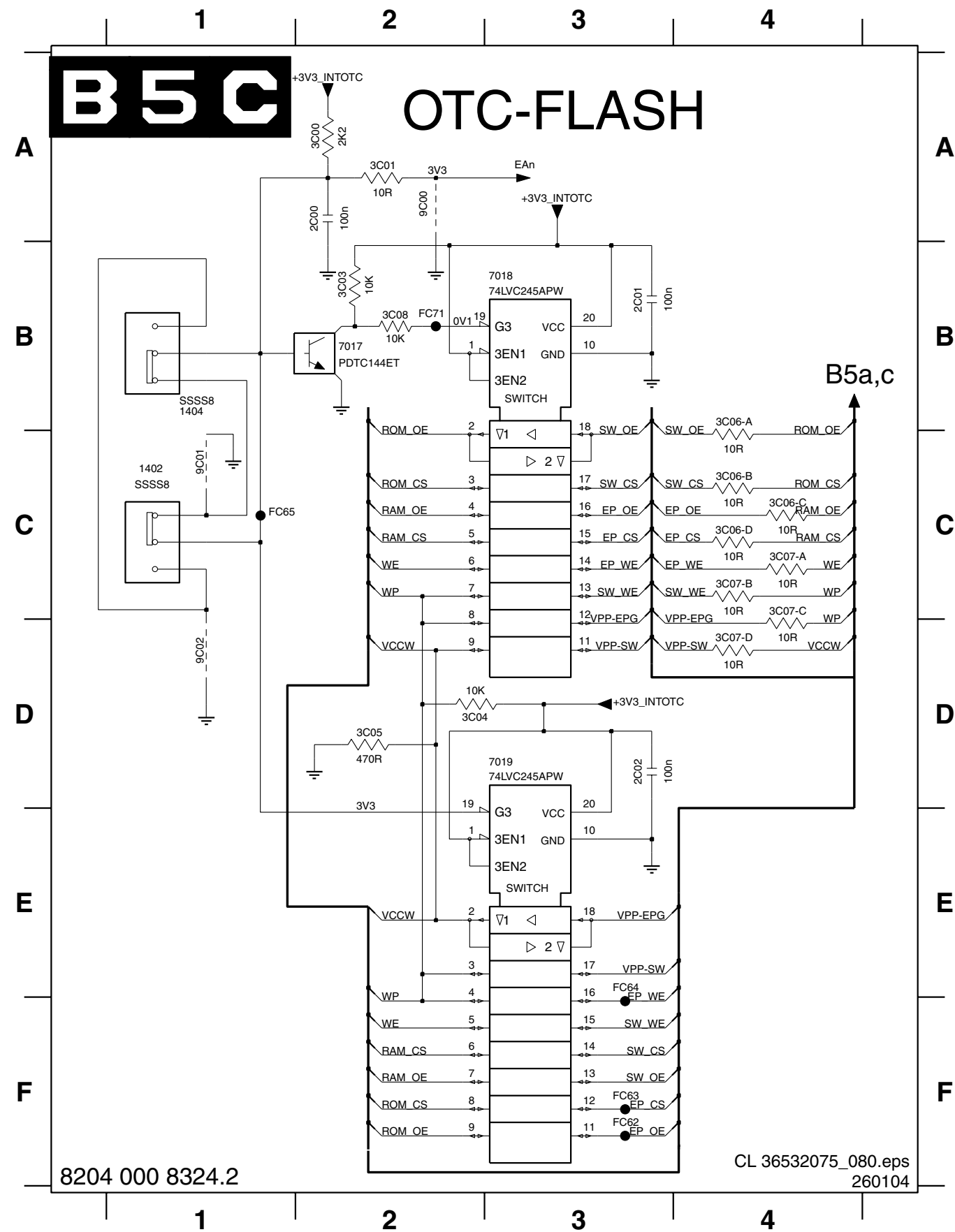


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	1401 H12	3031-D C13	3079 D3
	2002 F3	3033 B4	3080 A1
	2003 I4	3034-A G7	3081 A4
	2004 I4	3034-B G7	3082-A A13
	2005 I3	3034-C G7	3082-B B13
	2006 I3	3034-D G7	3082-C A3
	2007 I3	3035-A G7	3082-D B13
	2008 H4	3035-B H7	3083-A A13
	2009 I8	3035-C H7	3083-B B13
B	2010 I9	3035-D B7	3083-C A13
	2011 I9	3039 B2	3083-D B13
	2012 I9	3040 H2	3084 C8
	2013 E11	3041 H1	3085-A B11
	2014 H4	3042 I1	3085-B B11
	2016 E13	3045 I12	3085-C B11
	2017 F12	3046-I I12	3085-D B11
	2018 F3	3046-B H2	3086-A C11
	2019 E10	3046-C H2	3086-B B11
	2020 D2	3046-D H2	3086-C A11
C	2022 D2	3047 C2	3086-D A11
	2023 A5	3048-A B8	3087 I11
	2024 A5	3048-B C8	3088 D3
	2025 A5	3048-C C8	3089 A8
	2026 A6	3048-D C8	3090-A C4
	2027 A6	3049-A C8	3090-B C4
	2028 A6	3049-B A8	3090-C B4
	2029 A6	3049-C A8	3090-D B4
	2031 A8	3049-D A8	3091 B2
	2033 H8	3050-A A8	3092 D3
D	2034 H8	3050-B A8	3093 D11
	2035 H8	3050-C A8	3094 H1
	2036 H8	3050-D A8	3095 I1
	2037 H9	3051-A B8	3096 I2
	2038 E9	3051-B B8	3097 A3
	2039 G12	3051-C B8	3098 I10
	2040 A12	3051-D B8	3099-A B4
	2041 H1	3052-A B8	3099-B A4
	2052 I12	3052-B B8	3099-C A4
	2053 I11	3052-C C8	3099-D A4
E	2054 I12	3052-D C8	3100 F4
	2055 I13	3053 D2	3101 F4
	2056 I13	3054-A C10	3102-A C13
	2057 I13	3054-B B10	3102-B B13
	2058 B2	3054-C C10	3102-C C13
	2059 B2	3054-D B10	3102-D A13
	2060 A4	3055-A A10	3C09 H1
	2061 A3	3055-B B10	3C10 H1
	2067 H7	3055-C A10	3C11 I1
	2068 I2	3055-D B10	6001 D2
F	2070 A1	3056-A A10	6002 I1
	2071 A2	3056-B B10	6003 D3
	2072 B2	3056-C A10	6004 C2
	2073 C3	3056-D C10	6005 A4
	2074 C4	3057-A B10	7001 A6
	3001 F3	3057-B C10	7002 F11
	3002 F3	3057-C B10	7003 F12
	3003 I4	3057-D C10	7004 F13
	3004 E12	3058 B1	7005 E13
	3005 D13	3059 B2	7006 A9
G	3006 I6	3061-A B11	7007 F10
	3007-A I6	3061-B C11	7008 D1
	3007-B I6	3061-C H11	7009 D3
	3007-C I6	3061-D C11	7010 B3
	3007-D I6	3062 D11	7011 F2
	3008-A I7	3064-A E3	7012 A12
	3008-B I7	3064-B A4	7013 G12
	3008-C I7	3064-C E3	7014 G13
	3008-D I7	3064-D E4	7015 H2
	3010 E8	3065 G12	7016 I2
H	3011 D2	3066 G12	9001 H2
	3012-A H8	3067 G11	9002 I2
	3012-B H8	3068 A2	9003 F2
	3012-C H8	3069 D3	9004 F2
	3012-D H8	3072-A B13	9005 A4
	3013 F12	3072-B B13	9006 A3
	3014 F12	3072-C A13	9007 E12
	3015 F11	3072-D B13	9008 I0
	3016 F12	3073-A B4	9009 I11
	3017 F13	3073-B B4	9010 H11
I	3018 A2	3073-C B4	9011 I1
	3019 A2	3073-D B4	9012 I11
	3020 A2	3074-A E2	9013 I11
	3021 A2	3074-B E4	9014 B2
	3024 D3	3074-C E3	9015 C2
	3025 D1	3074-D A3	9016 B3
	3026 D4	3075 B1	9017 A4
	3027 D2	3076-A D3	9018 A3
	3029-A A11	3076-B D3	9020 I7
	3029-B A11	3076-C C3	FC01 A9
	3029-C A11	3076-D C4	FC02 A7
	3029-D A11	3077 C3	FC03 B7
	3031-A B11	3078-B C4	FC04 B8
	3031-B C13	3078-C A3	FC05 B10

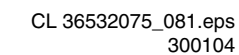
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3022 A1	3028 B2	3032 B3	3037 C4	7021-1 B4	9019 B4



1402 C1	2C01 B3	3C01 A2	3C05 D2	3C06-C C4	3C07-B C4	3C08 B2	7019 D3	9C02 D1	FC64 E3
1404 B1	2C02 D3	3C03 B2	3C06-A B4	3C06-D C4	3C07-C C4	7017 B2	9C00 A2	FC62 F3	FC65 C1
2C00 A2	3C00 A2	3C04 D2	3C06-B C4	3C07-A C4	3C07-D D4	7018 B3	9C01 C1	FC63 F3	FC71 B2



B6A AUDIO DEMODULATOR

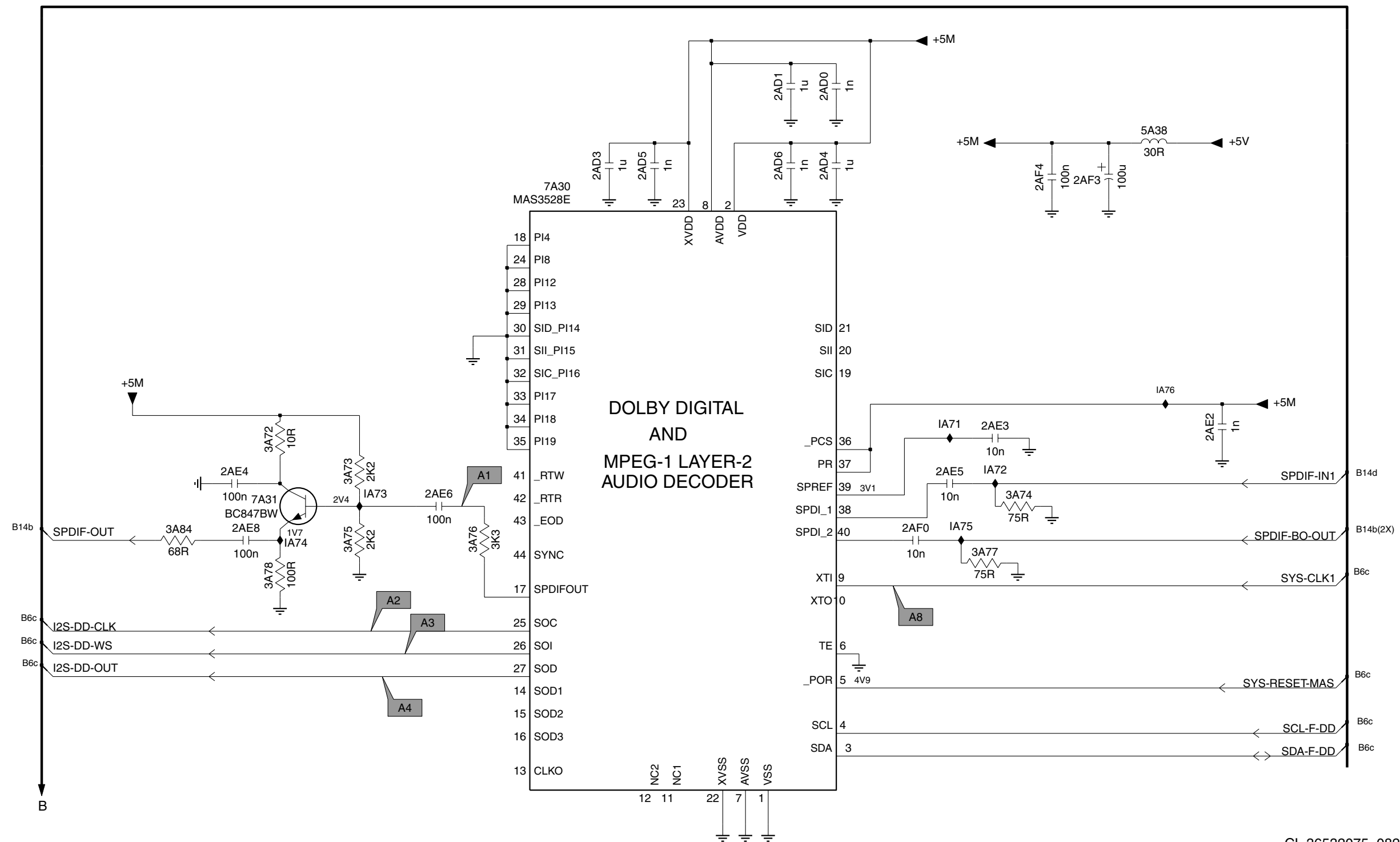


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	2A00 A3	2A94 I12	5A14 I2
	2A01 B2	2A95 I12	5A15 I2
	2A02 B2	2A96 I2	5A16 C13
	2A03 B3	2A97 I2	5A17 D13
	2A04 B3	2A98 I2	5A18 D13
	2A05 B1	2A99 I4	5A19 D2
	2A06 B2	2A0A I5	5A20 H8
	2A07 B2	2A0A H8	5A21 H5
	2A08 B2	2A0A I7	6A00 B7
B	2A09 B4	2A0A G7	6A01 H9
	2A10 B14	2A0A G7	6A02 I9
	2A11 B10	2A0A G6	7A00-A C12
	2A12 B4	2A0A G7	7A00-B B13
	2A13 B5	2A0B G8	7A01 B8
	2A14 B13	2A02 G5	7A02 B3
	2A15 B13	2A0B H3	7A03-A B11
	2A16 B13	2A0A H6	7A03-B B10
	2A17 B7	2A0B D8	7A06 G10
	2A18 B9	2A0B G4	7A07-A H7
C	2A19 I9	2A07 G4	7A07-B H4
	2A20 B1	2A0B B13	7A08 I5
	2A21 H8	2A07 H8	7A09 H7
	2A22 B10	2A0B I5	7A10-1 I8
	2A23 C9	3A00 B8	7A10-2 H8
	2A25 C12	3A01 B9	9A00 E12
	2A26 C10	3A02 B5	9A01 E12
	2A27 C8	3A03 B7	9A02 G13
	2A28 C13	3A05 B5	9A03 G13
	2A29 C3	3A06 B5	9A04 H2
D	2A30 C11	3A08 B5	9A05 H1
	2A31 C9	3A09 B8	9A06 H1
	2A32 D2	3A11 B13	9A08 H6
	2A33 D2	3A12 B12	9A09 H6
	2A34 D13	3A13 B10	FA12 B13
	2A35 D8	3A14 B10	FA13 B7
	2A36 D10	3A15 B12	FA14 B9
	2A37 D3	3A16 B14	FA17 B14
	2A38 D13	3A17 C2	FA23 D9
	2A39 D3	3A18 C12	FA24 D8
E	2A40 D9	3A19 C2	FA26 D2
	2A41 D9	3A20 C11	FAT2 E27
	2A42 D8	3A21 B12	IA00 H3
	2A43 D9	3A22 H5	IA01 H6
	2A44 D9	3A23 C11	IA02 H4
	2A45 D2	3A25 I7	IA03 H6
	2A46 D3	3A26 D10	IA04 B12
	2A47 E2	3A27 D11	IA05 C11
	2A48 E13	3A28 D9	IA06 C10
	2A49 E3	3A29 I7	IA07 C8
F	2A50 E8	3A30 I8	IA08 D8
	2A51 E2	3A31 D2	IA09 G6
	2A52 F13	3A32 E13	IA10 A2
	2A53 E3	3A33 F13	IA11 B4
	2A54 E8	3A34 F13	IA12 B2
	2A55 E2	3A35 I8	IA13 E2
	2A56 E3	3A36 F13	IA14 E2
	2A57 F13	3A37 F2	IA15 F2
	2A58 E2	3A38 I9	IA16 F2
	2A59 F3	3A39 F2	IA17 F2
G	2A60 F14	3A3A D2	IA18 G2
	2A61 F2	3A3B E2	IA19 I4
	2A62 F3	3A3C E2	IA20 I7
	2A63 F2	3A3D E2	IA21 H11
	2A64 F12	3A3E F2	IA22 B8
	2A65 B8	3A3F G2	IA23 D2
	2A66 F10	3A40 H7	IA24 D2
	2A67 F3	3A41 I5	IA25 B2
	2A68 F2	3A42 I13	IA26 H5
	2A69 G10	3A43 H13	IA27 I5
H	2A70 G10	3A44 H13	IA28 H7
	2A71 G3	3A45 H3	IA29 I7
	2A72 G10	3A46 I4	IA30 I7
	2A73 G2	3A47 H6	IA31 I8
	2A74 G10	3A48 H7	IA32 I9
	2A75 H10	3A49 I4	IA33 H8
	2A76 H13	3A50 A8	IA34 D8
	2A77 I14	3A51 I7	IA35 D8
	2A78 H14	3A52 I3	IA36 B7
	2A79 H4	3A53 I6	IA37 H8
I	2A80 I10	3A54 I8	IA38 I12
	2A81 I10	3A55 I4	ca01 H6
	2A82 I13	3A56 I6	
	2A83 H10	3A66 C10	
	2A84 H2	5A00 A2	
	2A85 H2	5A01 B3	
	2A86 H2	5A03 B2	
	2A87 H14	5A04 I13	
	2A88 I11	5A05 I13	
	2A89 I11	5A06 I12	
	2A90 I11	5A10 G2	
	2A91 I4	5A11 H2	
	2A92 I6	5A12 H2	

Small Signal Panel: Dolby Digital Decoder

B6B

DOLBY DIGITAL DECODER (NOT USED)

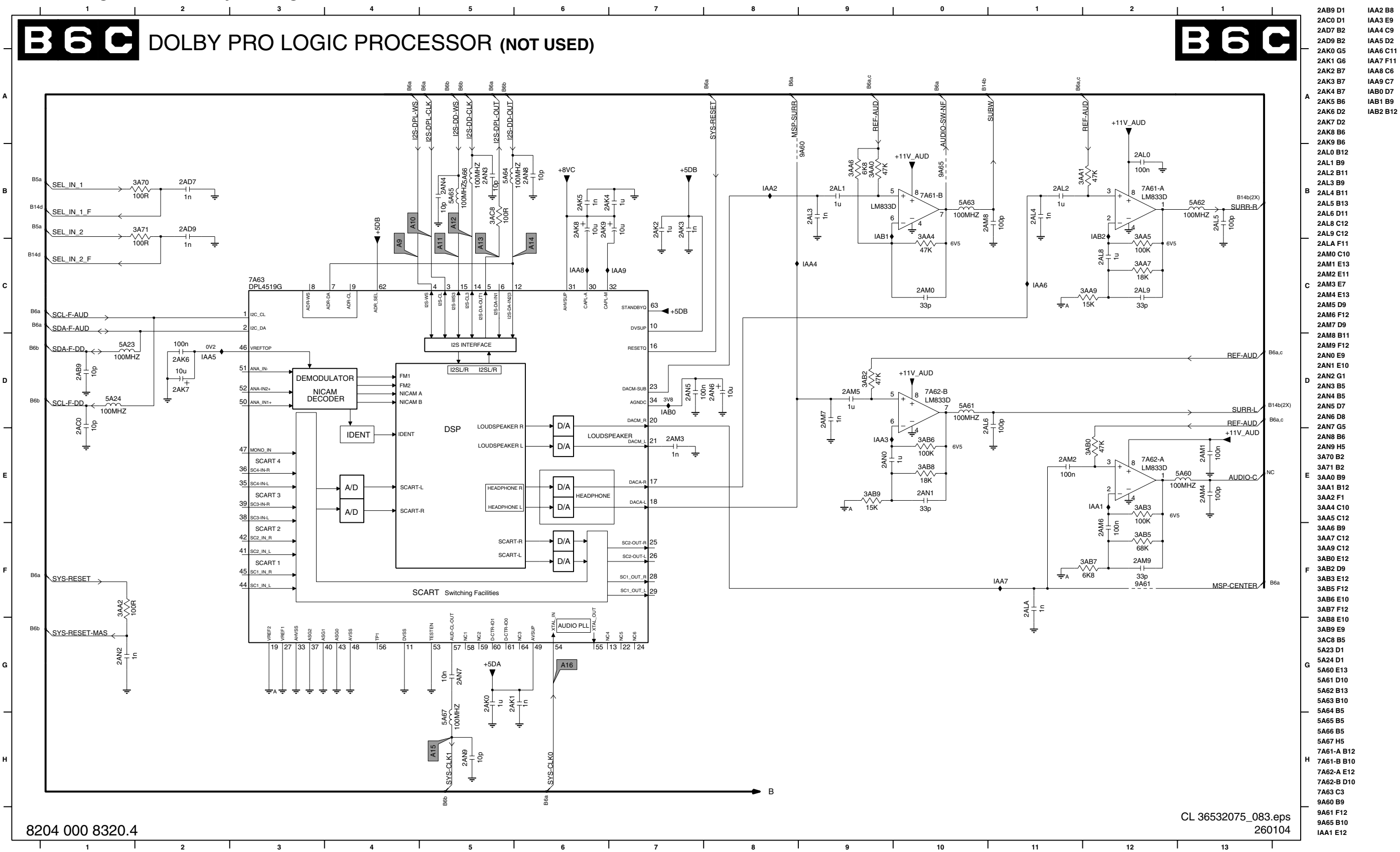
B6B

2AD0 B6
2AD1 B6
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2AD6 B6
2AE2 D8
2AE3 D7
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2AE5 D7
2AE6 D3
2AE8 D2
2AF0 D6
2AF3 B8
2AF4 B7
3A72 D2
3A73 D3
3A74 D7
3A75 E3
3A76 E4
3A77 E7
3A78 E2
3A84 D2
5A38 B8
7A30 B4
7A31 D2
IA71 D7
IA72 D7
IA73 D3
IA74 E3
IA75 D7
IA76 D8

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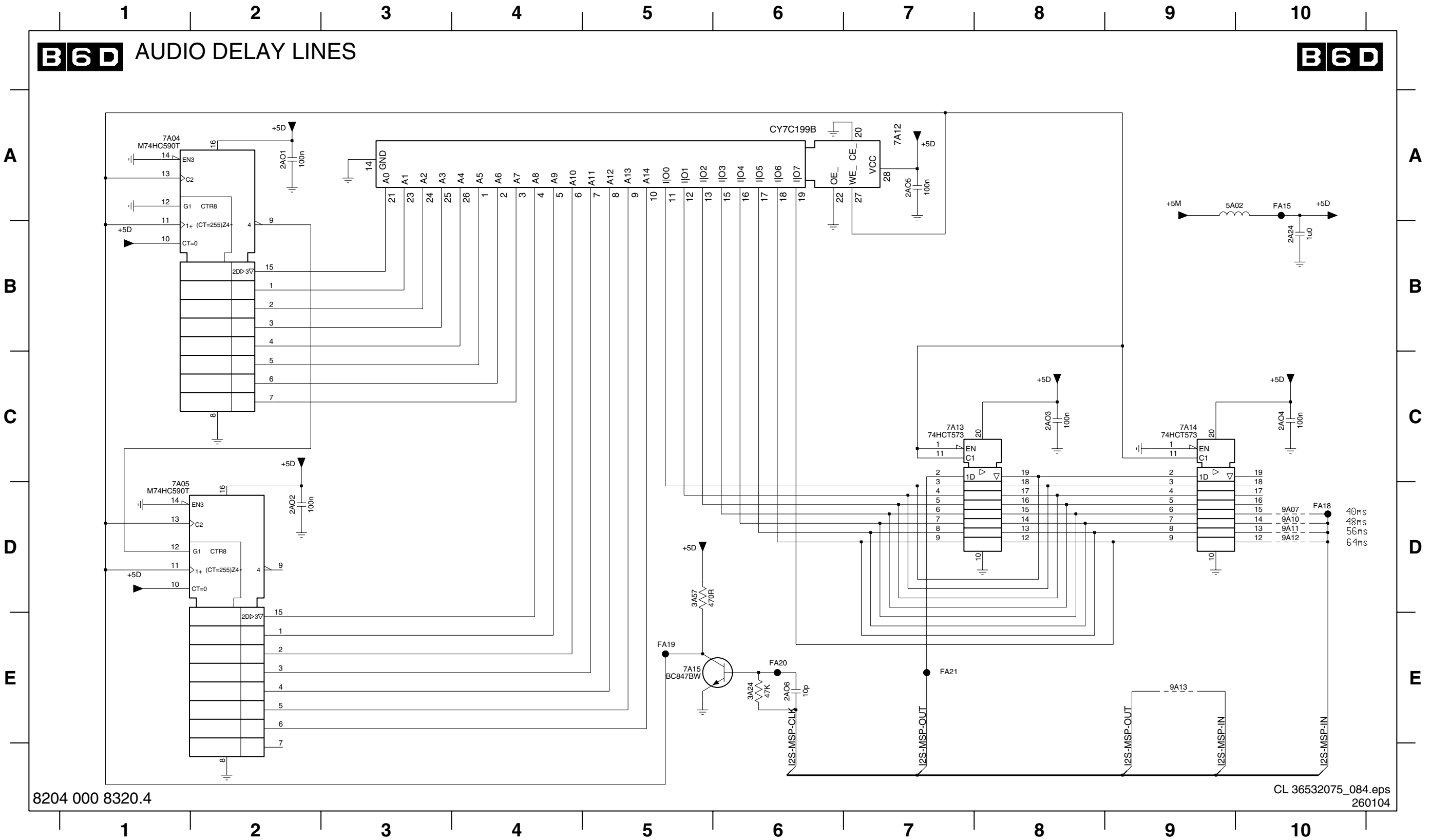
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300104

Small Signal Panel: Dolby Pro Logic Processor

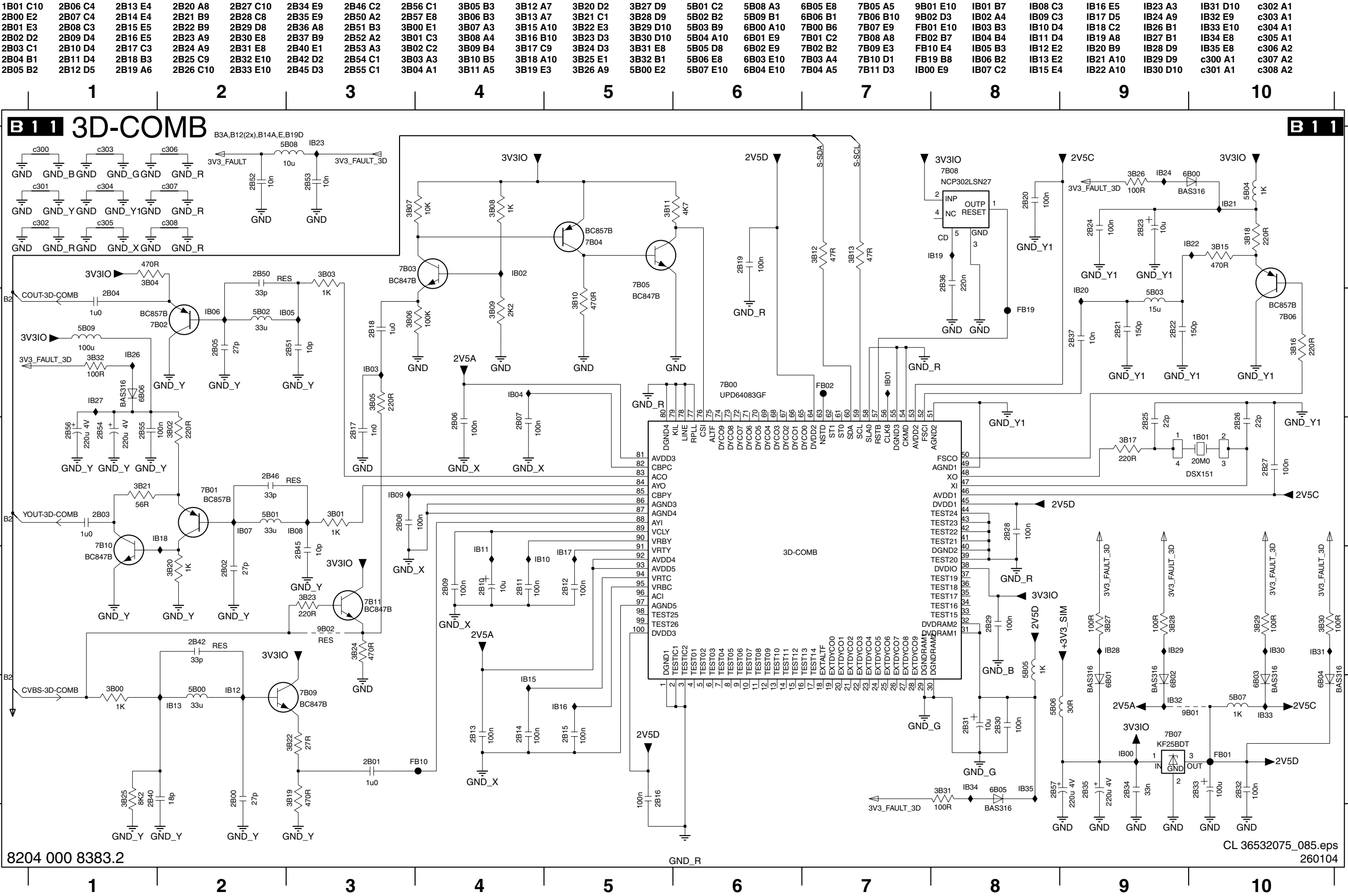


Small Signal Panel: Audio Delay Lines

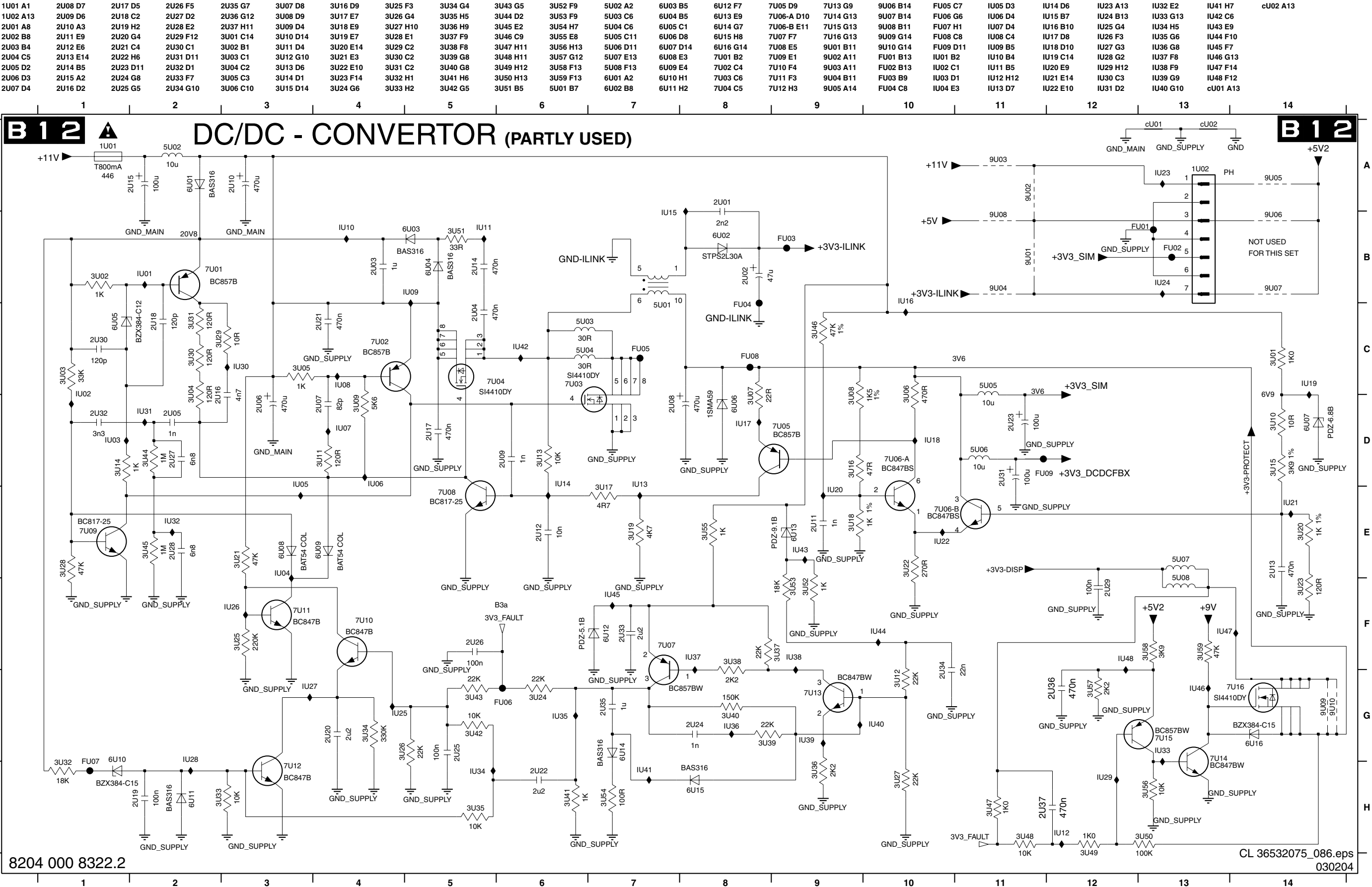
2A24 B10	2AO2 D2	2AO4 C10	2AO6 E6	3A57 D5	7A04 A1	7A12 A7	7A14 C9	9A07 D10	9A11 D10	9A13 E9	FA18 D10	FA20 E6
2AO1 A2	2AO3 C8	2AO5 A7	3A24 E6	5A02 A9	7A05 D1	7A13 C7	7A15 E5	9A10 D10	9A12 D10	FA15 A10	FA19 E5	FA21 E7



Small Signal Panel: 3d-Comb

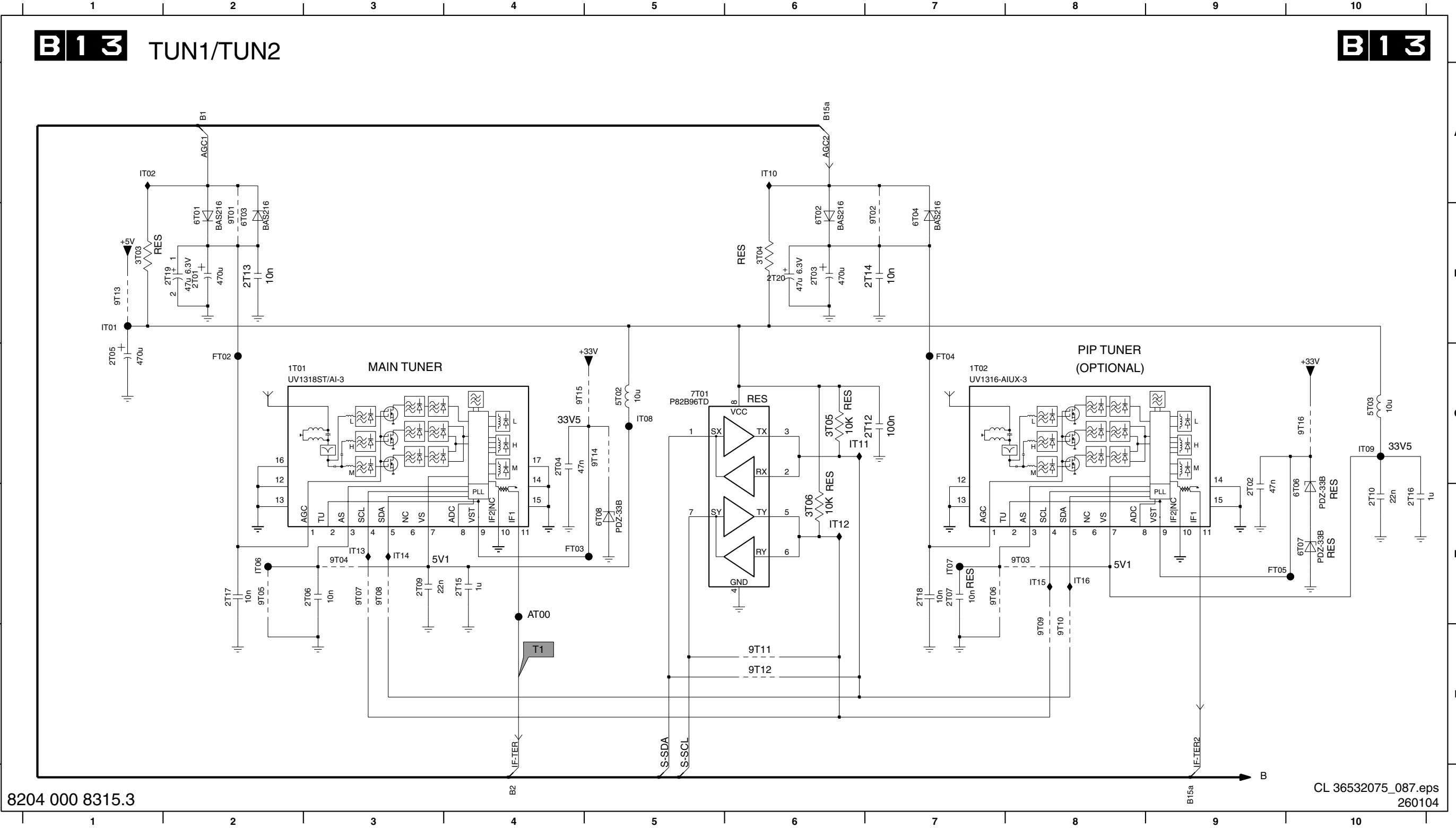


Small Signal Panel: DC/DC-Convertor

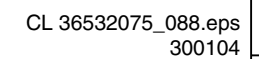


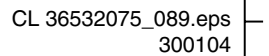
Small Signal Panel: Tun1/Tun2

1T01 C2	2T02 D9	2T05 C1	2T09 D3	2T13 B2	2T16 D10	2T19 B2	3T04 B6	5T02 C5	6T02 B6	6T06 D10	7T01 C5	9T03 D8	9T06 D7	9T09 E8	9T12 E6	9T15 C4	FT02 C2	FT05 D9	IT06 D2	IT09 C10	IT12 D6	IT15 D8
1T02 C7	2T03 B6	2T06 D3	2T10 D10	2T14 B7	2T17 D2	2T20 B6	3T05 C6	5T03 C10	6T03 B2	6T07 D10	9T01 B2	9T04 D3	9T07 D3	9T10 E8	9T13 B1	9T16 C10	FT03 D4	IT01 B1	IT07 D7	IT10 A6	IT13 D3	IT16 D8
2T01 B2	2T04 C4	2T07 D7	2T12 C7	2T15 D4	2T18 D7	3T03 B1	3T06 D6	6T01 B2	6T04 B7	6T08 D5	9T02 B7	9T05 D2	9T08 D3	9T11 E6	9T14 C5	AT00 D4	FT04 C7	IT02 A1	IT08 C5	IT11 C6	IT14 D3	

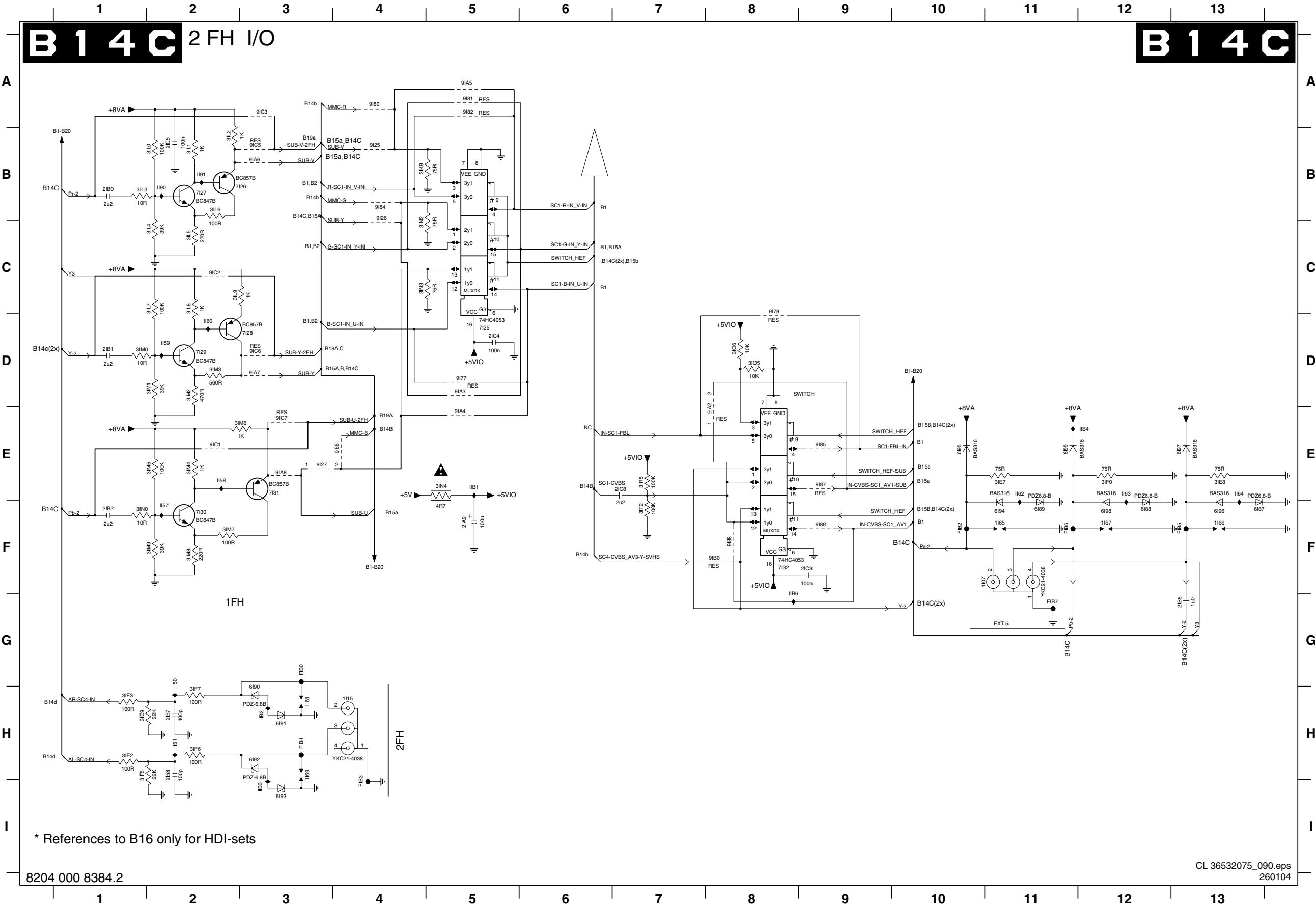


B 1 4 A I/O US

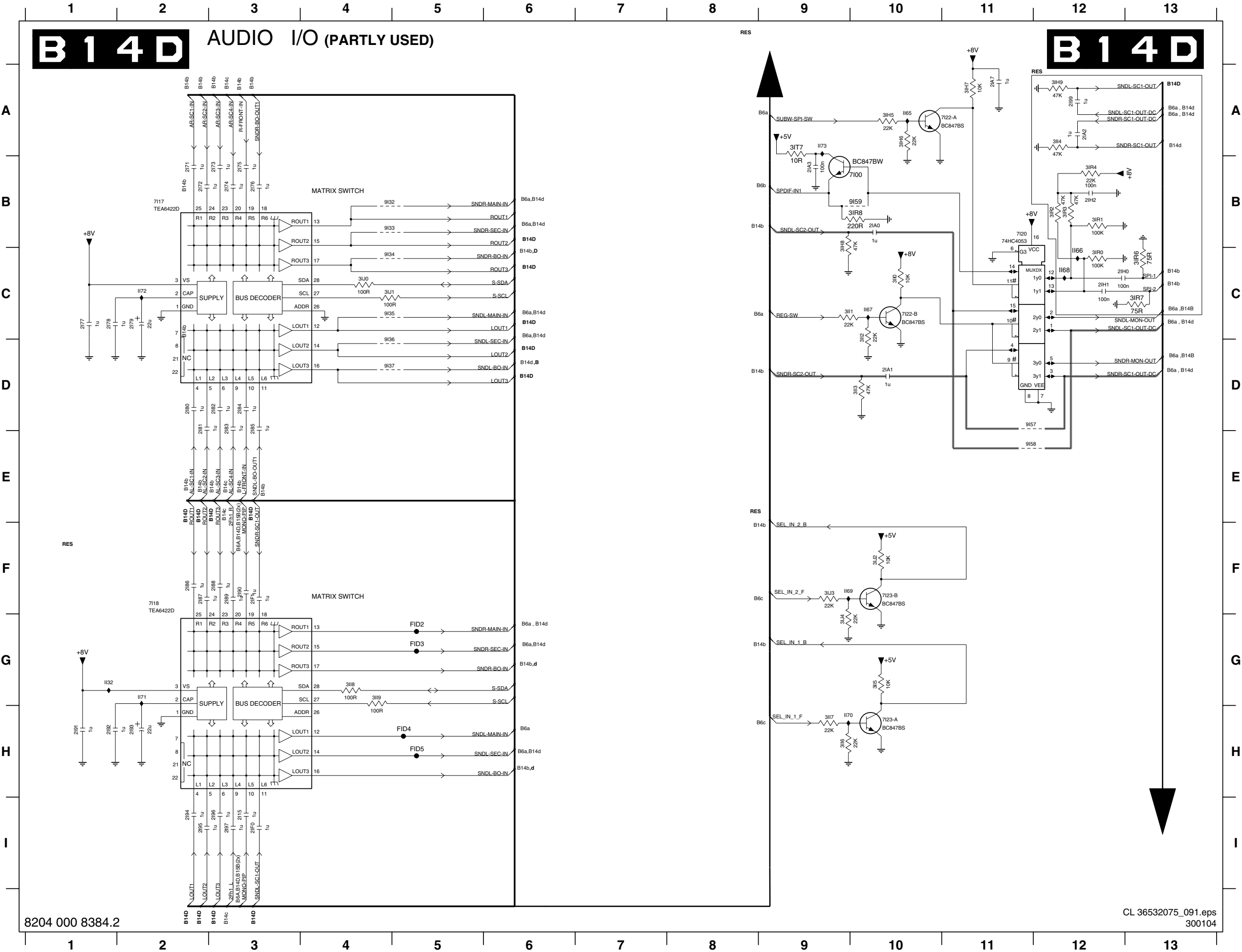


[illegible]

Small Signal Panel: 2FH I/O



Small Signal Panel: Audio I/O

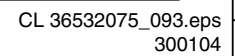


- 2115 I3
- 2171 B2
- 2172 B2
- 2173 B3
- 2174 B3
- 2175 B3
- 2176 B3
- 2177 C1
- 2178 C1
- 2179 C2
- 2180 D2
- 2181 D2
- 2182 D3
- 2183 D3
- 2184 D3
- 2185 D3
- 2186 F2
- 2187 F2
- 2188 F3
- 2189 F3
- 2190 F3
- 2191 H1
- 2192 H1
- 2193 H2
- 2194 I2
- 2195 I2
- 2196 I3
- 2197 I3
- 2199 A12
- 21A0 B10
- 21A1 D10
- 21A2 A12
- 21A3 B9
- 21A7 A11
- 21F1 I3
- 21F1 F3
- 21H0 C12
- 21H1 C12
- 21H2 B12
- 31H5 A10
- 31H6 A10
- 31H7 A11
- 31H8 B9
- 31H9 A12
- 31I0 C10
- 31I1 C9
- 31I2 C10
- 31I3 D10
- 31I4 A12
- 31I5 G10
- 31I6 H9
- 31I7 H9
- 31I8 G4
- 31I9 G4
- 31J0 C4
- 31J1 C4
- 31J2 F10
- 31J3 F9
- 31J4 G9
- 31R0 C12
- 31R1 B12
- 31R2 B12
- 31R3 B12
- 31R4 B12
- 31R6 C13
- 31R7 C13
- 31R8 B10
- 31T7 A9
- 7100 B10
- 7117 B2
- 7118 F2
- 7120 B11
- 7122-A A10
- 7122-B C10
- 7123-A H10
- 7123-B F10
- 9132 B4
- 9133 B4
- 9134 C4
- 9135 C4
- 9136 D4
- 9137 D4
- 9157 D11
- 9158 E11
- 9159 B10
- FID2 G5
- FID3 G5
- FID4 H5
- FID5 H5
- I132 G1
- I165 A10
- I166 C12
- I167 C10
- I168 C12
- I169 F9
- I170 H9
- I171 G2
- I172 C2
- I173 A9

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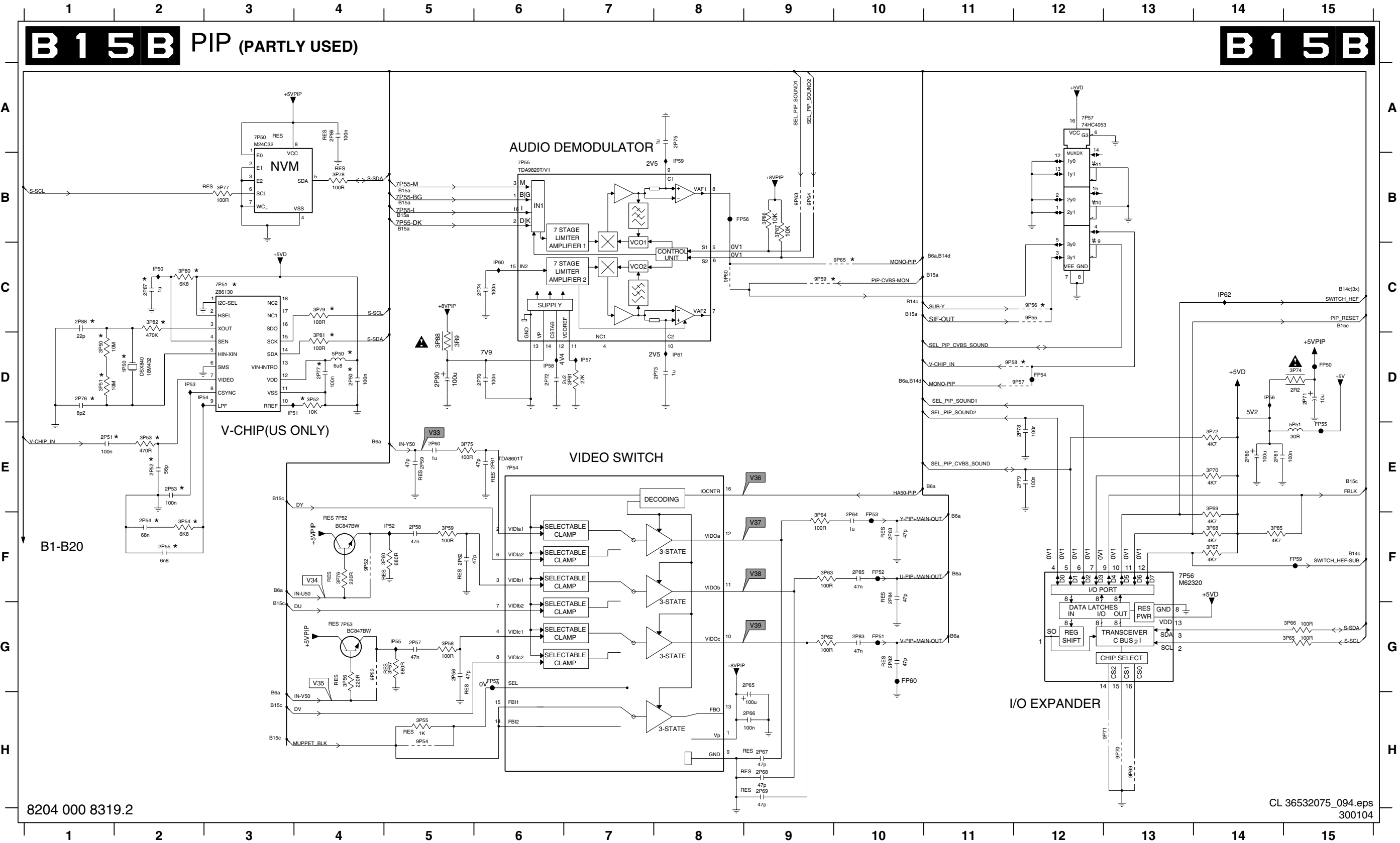
B 1 5 A PIP - HIP (NOT USED)



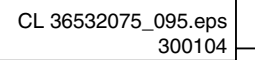
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	1P00 E11	3P13 F2	9P21 G11
	1P01 E12	3P14 F5	9P22 G11
	1P02 E13	3P15 G5	9P23 I6
	1P03 E13	3P16 H5	9P24 G9
	1P04-A C3	3P17 G2	9P25 F9
	1P04-B D3	3P18 G2	9P26 E11
	1P05-A E4	3P19 G2	9P27 E11
	1P05-B F3	3P20 H1	9P28 F12
	1P06-A G4	3P21 C7	9P29 F13
B	1P06-B H3	3P22 B10	AP02 C1
	1P07 G7	3P23 B10	AP04 C4
	1P08 E5	3P24 B11	AP05 C4
	1P09 E6	3P25 D7	AP06 C5
	1P10 E13	3P26 D7	AP07 C5
	1P11 F14	3P27 E6	AP09 G3
	1P12 E12	3P28 E6	FP02 B8
	2P00 B1	3P29 E11	FP03 C1
	2P01 B2	3P30 F9	FP08 B5
	2P02 B2	3P31 F7	FP11 I7
C	2P03 C1	3P32 F7	FP12 H9
	2P04 D2	3P34 G9	FP13 F7
	2P05 D5	3P35 G9	FP14 E6
	2P06 G3	3P36 H7	FP15 D7
	2P07 G3	3P37 H7	FP16 D7
	2P08 H3	3P38 H6	FP17 F7
	2P10 F8	3P39 G7	FP23 B11
	2P11 F8	3P40 F6	FP24 D12
	2P12 F8	3P41 D13	FP25 D12
	2P13 F8	3P42 D13	FP26 D12
D	2P14 F8	3P43 D13	FP27 D5
	2P15 F8	3P44 F9	FP29 H11
	2P16 F7	3P45 H11	FP36 G9
	2P17 E7	3P46 H11	FP37 C12
	2P18 D7	3P47 I12	FP38 C12
	2P19 D7	3P48 B7	FP39 C12
	2P20 D7	3P90 E12	FP40 C12
	2P21 C7	3P91 E13	FP41 H8
	2P22 C7	3P92 E14	FP42 H9
	2P23 B7	3P93 E14	IP00 B5
E	2P24 B7	5P00 B2	IP01 E5
	2P25 B6	5P01 B3	IP02 B5
	2P26 B8	5P02 C1	IP03 E5
	2P27 B8	5P03 B1	IP10 H8
	2P28 B9	5P04 D3	IP17 C7
	2P29 B11	5P05 E5	IP20 B8
	2P30 B11	5P06 E6	IP21 B9
	2P31 C11	5P07 H2	IP22 D5
	2P32 C11	5P08 D6	IP23 B2
	2P33 C11	5P09 B7	IP24 B3
F	2P34 F11	5P10 B7	IP25 B2
	2P35 F11	6P00 E2	IP26 B4
	2P36 F11	6P01 E2	IP27 B3
	2P37 F11	6P02 G2	IP28 C3
	2P38 F12	6P03 D2	IP29 C4
	2P39 F12	7P00 D2	IP30 B3
	2P40 F12	7P01 F2	IP31 B3
	2P41 F13	7P02 H1	IP32 C3
	2P42 F13	7P03 F5	IP33 B6
	2P43 F13	7P04 G5	IP34 B7
G	2P44 F14	7P05 D6	IP35 B7
	2P45 C11	7P06 E7	IP36 B10
	2P46 D11	7P07 H7	IP37 H11
	2P47 D11	7P08 F9	IP38 H11
	2P48 F7	7P09 D9	IP39 H12
	2P49 D7	7P10 D13	IP40 G13
	2P91 G11	7P11 G11	IP41 G14
	2P92 I12	9P00 B4	IP42 H13
	2P93 H14	9P01 C3	IP43 H14
	2P94 G14	9P02 D5	cP00 B8
H	2P95 G13	9P03 D6	
	2P96 G12	9P04 E2	
	2P97 F14	9P05 E5	
	2P98 B7	9P06 E7	
	2P99 B7	9P07 G7	
	3P00 B2	9P08 G7	
	3P01 B3	9P09 G6	
	3P02 C3	9P10 F3	
	3P03 B5	9P11 E3	
	3P04 B5	9P12 G8	
I	3P05 C5	9P13 D11	
	3P06 B5	9P14 G6	
	3P07 D2	9P15 E7	
	3P08 D2	9P16 E2	
	3P09 E3	9P17 H7	
	3P10 D5	9P18 G7	
	3P11 E5	9P19 I6	

Small Signal Panel: PIP

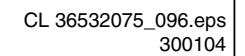
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2P50 D4	2P54 F2	2P58 F5	2P62 F5	2P66 H9	2P70 D6	2P74 C6	2P78 E12	2P82 G10	2P86 A4	3P50 D1	3P54 F2	3P58 G5	3P62 G9	3P66 G15	3P70 E14	3P76 F4	3P80 C2	3P86 B9	5P51 E15	7P53 G4	7P57 A12	9P55 C12	9P59 C9	9P65 C10	9P69 H13	FP54 D12	FP58 F15	IP52 F5	IP56 D14	IP60 C6
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2P52 E2	2P56 G5	2P60 E5	2P64 F10	2P68 H9	2P72 D6	2P76 D1	2P80 E14	2P84 F10	2P88 C1	3P52 D4	3P56 G4	3P60 F5	3P64 F9	3P68 F14	3P74 D15	3P78 B4	3P82 C2	3P88 D5	7P51 C3	7P55 B6	9P53 G4	9P57 D12	9P63 B9	9P70 H13	FP56 B8	FP60 C2	IP54 D2	IP58 D6	IP62 C14	



2PA0 B4	2PA7 D4	2PB4 G4	2PC1 B6	2PC8 C8	2PD5 B10	2PE2 E13	2PE9 D13	2PF8 G5	3PA5 H12	3PB2 D1	3PB9 F2	3PC6 G4	3PD3 H4	3PE0 B11	3PF0 F11	3PF7 E12	3PG4 C3	3PH5 A8	3PA2 B7	3PA9 C13	6PB3 B7	7PA0 B3	7PA7 F2	7PB4 B14	9PA4 G2	9PB3 B3	FPA4 G5	FPB1 F5	IP4B D5	IPB5 F3
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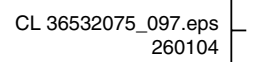


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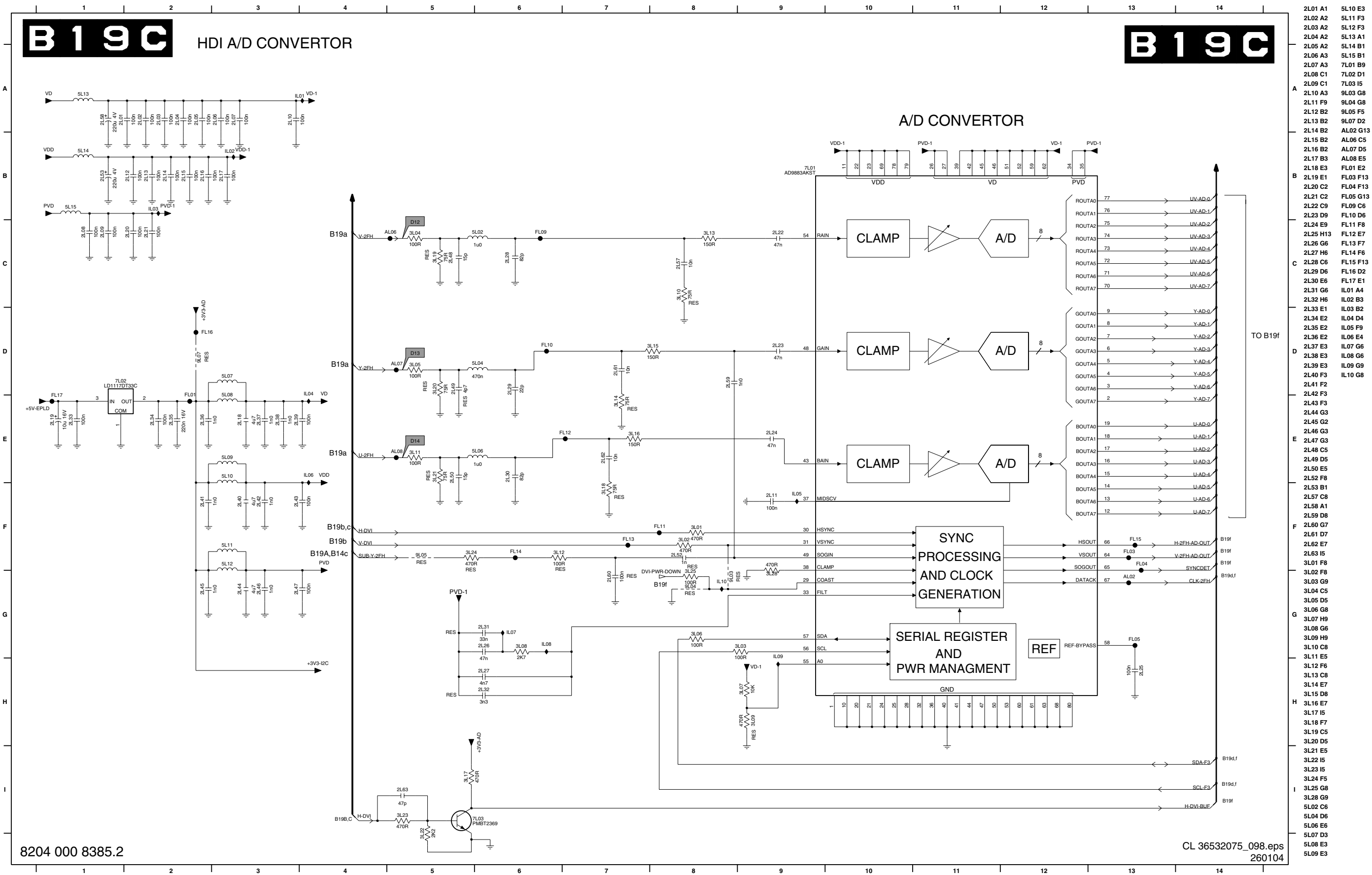


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1D12 I3	FD53 F7
2D16 H11	FD55 I5
2D17 H11	FD63 F12
2D51 B3	FD64 H5
2D52 C3	FD65 H5
2D53 B9	FD66 H7
2D54 C9	FD67 H7
2D55 C9	FD69 C8
2D57 E3	FD70 D9
2D58 C9	ID59 A5
2D59 D9	ID61 D6
2D60 D9	ID62 B6
2D61 B2	ID63 E5
2D62 F14	ID64 F6
2D63 D2	ID65 D5
2D64 F2	
2D65 I4	
2D68 A7	
2D70 F12	
2D71 I11	
2D74 F11	
2D75 I4	
2D76 I5	
2D77 H5	
2D78 H5	
3D40 G5	
3D41 H7	
3D42 H7	
3D43 H7	
3D44 H7	
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3D52 A5	
3D53 F3	
3D54 E2	
3D55 F5	
3D56 B5	
3D57 A6	
3D58 C13	
3D59 B7	
3D60 D6	
3D61 D5	
3D62 D6	
3D63 B7	
3D64 C14	
3D65 D3	
3D66 C2	
3D67 F6	
3D68 F5	
3D69 D14	
3D70 D7	
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3D72 B2	
3D73 F11	
3D79 F7	
3D80 B2	
3D81 G5	
3D82 D2	
3D83 A6	
3D84 F2	
3D85 C5	
3D86 B5	
3D87 C7	
3D88 D5	
3D89 E7	
3D90 F6	
3D91 F7	
5D51 F11	
5D54 F11	
5D56 D9	
5D57 G12	
5D58 H12	
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6D62 I5	
6D63 H5	
6D64 I5	
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7D52 B3	
7D53 D3	
7D54 F3	
7D55 C5	
7D57-A A7	
7D57-B C7	
7D57-C D7	
7D57-D F7	
9D51 A11	
9D52 A11	
9D53 A11	
9D55 B7	
9D61 B6	
9D62 C5	

1V21 E1	1V26 F4	1V31 K4	1V51 J7	2V28 C21	2V34 C22	2V41 F18	2V48 G3	2V55 J22	2V60 N26	2V65 M16	2V72 L8	2V79 N26	3V24 N28	3V29 M17	3V34 K16	3V40 N11	3V44 M7	5V21 D19	5V26 E17	5V31 F23	6V24 G9	6V29 N15	7V21 H18	9V21 I25	FV24 D2	FV29 H2	FV35 L25	FV40 N9	IV23 G23	IV28 E20
1V22 D3	1V27 H3	1V32 E3	2V24 D17	2V29 C20	2V35 E20	2V43 F18	2V50 G23	2V56 J22	2V61 N25	2V67 H16	2V73 L9	2V80 M16	3V25 N24	3V30 N16	3V35 N17	3V40 N8	3V47 G4	5V22 D21	5V27 L24	5V32 M24	6V25 G10	6V30 N12	7V22 M16	9V22 J25	FV25 D2	FV30 J2	FV36 M26	FV41 M15	IV24 H25	IV28 F17
1V23 D4	1V28 I3	1V48 F8	2V25 C17	2V31 D21	2V37 E21	2V44 F19	2V51 I22	2V57 J22	2V62 N24	2V68 H16	2V74 L10	3V21 J24	3V26 N23	3V31 N15	3V36 I23	3V41 N8	3V48 M13	5V23 D21	5V28 L24	6V21 E8	6V26 G11	6V31 M12	7V23 L14	FV21 C2	FV26 F2	FV31 J2	FV37 K17	FV42 I3	IV25 I25	IV31 F18
1V24 E4	1V29 I4	1V49 I8	2V26 C18	2V32 D23	2V38 E19	2V45 F21	2V52 I22	2V58 K25	2V63 N23	2V69 H15	2V75 L10	3V22 K24	3V27 N23	3V32 K14	3V37 I23	3V42 M9	3V49 M14	5V24 E22	5V29 L9	6V22 E9	6V27 G12	6V33 N6	7V24 L15	FV22 C1	FV27 F2	FV32 N17	FV38 C17	IV21 D20	IV26 J23	
1V25 F3	1V30 K3	1V50 I8	2V27 C19	2V33 C23	2V40 E19	2V47 F22	2V54 I24	2V59 K25	2V64 N22	2V71 H15	2V78 D24	3V23 N26	3V28 N22	3V33 K15	3V38 M11	3V43 M7	3V56 H17	5V25 E18	5V30 G24	6V23 G8	6V28 G13	6V32 N6	7V26 M9	FV23 H1	FV28 G2	FV34 L26	FV39 G3	IV22 G20	IV27 I9	



Small Signal Panel: HDI A/D Converter

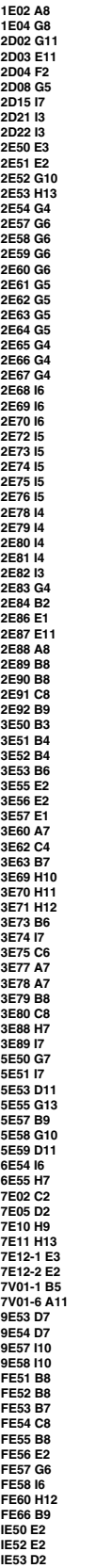


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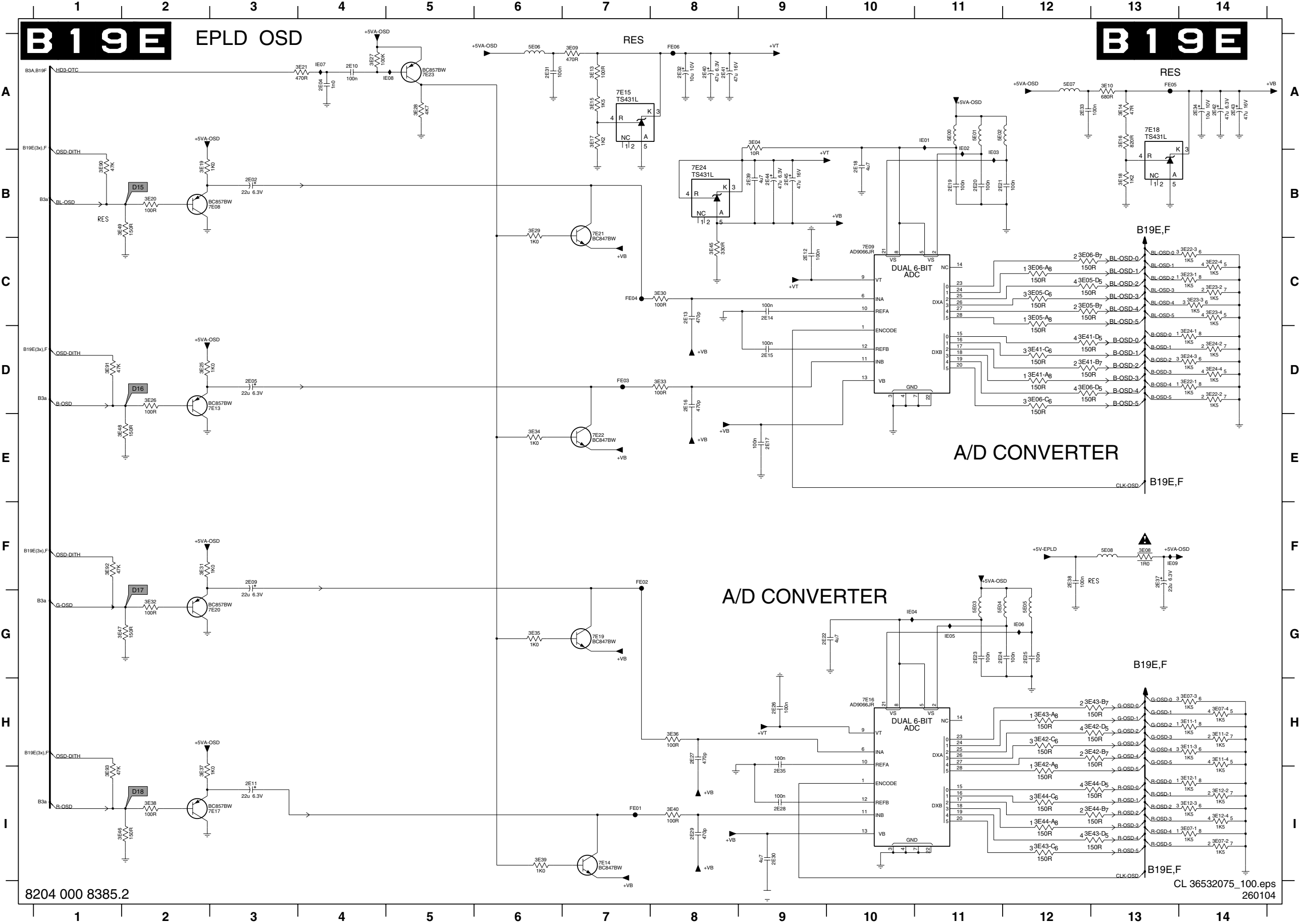
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2L06 A3	5L15 B1
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2L08 C1	7L02 D1
2L09 C1	7L03 I5
2L10 A3	9L03 G8
2L11 F9	9L04 G8
2L12 B2	9L05 F5
2L13 B2	9L07 D2
2L14 B2	AL02 G13
2L15 B2	AL06 C5
2L16 B2	AL07 D5
2L17 B3	AL08 E5
2L18 E3	FL01 E2
2L19 E1	FL03 F13
2L20 C2	FL04 F13
2L21 C2	FL05 G13
2L22 C9	FL09 C6
2L23 D9	FL10 D6
2L24 E9	FL11 F8
2L25 H13	FL12 E7
2L26 G6	FL13 F7
2L27 H6	FL14 F6
2L28 C6	FL15 F13
2L29 D6	FL16 D2
2L30 E6	FL17 E1
2L31 G6	IL01 A4
2L32 H6	IL02 B3
2L33 E1	IL03 B2
2L34 E2	IL04 D4
2L35 E2	IL05 F9
2L36 E2	IL06 E4
2L37 E3	IL07 G6
2L38 E3	IL08 G6
2L39 E3	IL09 G9
2L40 F3	IL10 G8
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3L25 G8	
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5L08 E3	
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B 1 9 D EPLD CONTROL

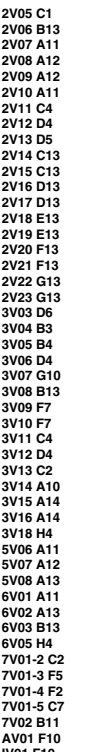


Small Signal Panel: EPLD OSD



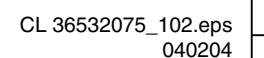
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2E12 C9	3E93 I1
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2E15 D9	5E02 A11
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2E17 E9	5E04 G11
2E18 B10	5E05 G12
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2E27 H8	7E16 H10
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2E29 I8	7E18 A13
2E30 I9	7E19 G7
2E31 A5	7E20 G2
2E32 A8	7E21 B7
2E33 A12	7E22 E7
2E34 A14	7E23 A5
2E35 I9	7E24 B8
2E37 F13	FE01 I7
2E38 F12	FE02 F7
2E39 B9	FE03 D7
2E40 A8	FE04 C7
2E41 A8	FE05 A13
2E42 A14	FE06 A8
2E43 A14	IE01 A11
2E44 B9	IE02 A11
2E45 B9	IE03 B11
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3E43-D I13	
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3E44-B I13	
3E44-C I12	
3E44-D I13	
3E45 C8	
3E46 I1	

B 1 9 F EPLD I/O



LVDS TRANSMITTER

1Y00 A8	1Y06 D4	1Y11 B8	1Y16 D3	1Y30 E1	1Y99 E9	2Y05 B2	2Y10 C2	3Y02 E6	5Y04 B2	9Y03 E4	FY05 C7	FY10 B3	FY15 D7	FY20 C2	FY25 C7	FY30 E4	FY35 D2	FY40 E8
1Y01 C4	1Y07 D4	1Y12 D7	1Y17 E3	1Y45 D1	2Y00 E6	2Y06 B2	2Y11 C2	3Y03 E4	5Y05 C2	FY01 A8	FY06 D7	FY11 E7	FY16 C3	FY21 C2	FY26 D4	FY31 E4	FY36 A4	FY41 E8
1Y03 B7	1Y08 D4	1Y13 D8	1Y18 E2	1Y81 A8	2Y01 C6	2Y07 B2	2Y12 A2	5Y01 A2	9Y00 E4	FY02 A3	FY07 A3	FY12 B3	FY17 C3	FY22 B8	FY27 D4	FY32 E3	FY37 E8	FY42 E3
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1Y05 D4	1Y10 E7	1Y15 D8	1Y20 D3	1Y88 C8	2Y04 B2	2Y09 C2	3Y01 E8	5Y03 B2	9Y02 E4	FY04 A3	FY09 E7	FY14 B3	FY19 D2	FY24 C7	FY29 D4	FY34 D2	FY39 E3	



Layout Small Signal Panel Mapping (Top Side)

1001	B7	2324	C4	2735	B7	2A03	E4	2AK4	E5	2E27	E8	2IC3	A6	2PC6	B3	2V68	B8	3387	C5	3774	D7	3A3B	E4	3E44	D9	3IO7	A8	3PE2	C2	3Y02	F1	5I22	F3	6I17	A8	7A04	E3	7V01	C9	9I80	A5	9T12	A2
1304	A6	2327	B5	2740	D6	2A04	E4	2AK5	E5	2E28	E9	2IC5	A5	2PC7	B2	2V69	B9	3388	C4	3781	D7	3A3C	D4	3E46	E9	3IP8	A2	3PE3	C2	3Y03	F3	5I23	F1	6I18	A8	7A05	D3	7V02	D9	9I84	A5	9T13	A1
1401	A6	2329	C5	2741	D5	2A06	D4	2AK6	E5	2E29	E9	2IC6	A2	2PC8	B2	2V71	B9	3390	C4	3782	D7	3A3D	D4	3E47	E8	3IS5	A6	3PE4	C2	5301	C5	5ID1	B2	6I75	A2	7A08	D4	7V21	B9	9I86	A5	9U01	E6
1402	A7	2330	C5	2742	D5	2A08	D4	2AK7	E5	2E30	E9	2IE0	B2	2PC9	C2	2V78	A9	3393	B5	3783	D7	3A3E	D4	3E48	E9	3IS0	A2	3PE5	C2	5302	C5	5L02	A9	6I76	A2	7A09	D4	7V22	B9	9I97	B3	9U02	E6
1403	B4	2331	C5	2743	D6	2A09	E5	2AK9	E4	2E35	E9	2IE2	A8	2PD1	C2	2V80	F9	3394	C5	3793	D6	3A3F	D4	3E49	E9	3IS1	A2	3PE9	D3	5303	A6	5L04	A9	6I77	A2	7A10	D4	9016	C6	9IA6	A4	9U03	E6
1408	B5	2332	C5	2744	D6	2A10	D4	2AL0	E4	2E37	E9	2IF0	A2	2PD2	D2	2Y00	F1	3395	C5	3794	B8	3A40	D4	3E55	E9	3IS8	A2	3PF0	C3	5306	A6	5L06	A9	6I78	A2	7A12	E3	9017	A7	9IA7	A5	9U04	E6
1702	D6	2333	C4	2745	E5	2A11	D4	2AL1	E5	2E38	E9	2IJ5	B2	2PD3	C3	2Y03	F5	3396	C5	3795	B8	3A41	D4	3E56	E9	3IS9	A2	3PF1	C2	5307	A5	5L07	A9	6I79	A2	7A13	E3	9018	A7	9IA8	A5	9U05	E6
1D07	A9	2334	C5	2751	D6	2A12	E5	2AL2	E4	2E50	E9	2IJ6	E1	2PD4	C3	2Y04	F5	3397	C5	3796	B8	3A42	D4	3E57	E9	3IT5	A2	3PF2	C3	5309	A5	5L08	A9	6IA3	E2	7A14	E3	9302	C5	9IA9	A8	9U06	E6
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1E04	F9	2339	A5	2754	A8	2A14	D5	2AL4	E5	2E52	A8	2L18	A9	2PD6	C3	2Y06	F5	3399	C4	3798	B8	3A44	E5	3E63	E9	3L01	A8	3PF4	C3	5311	A5	5L10	A9	6P02	B2	7A61	E4	9304	C5	9ID0	E3	9U08	F6
1I01	A6	2340	C5	2755	D6	2A15	D5	2AL5	E4	2E54	C9	2L19	A9	2PD7	C3	2Y07	F5	3400	C4	3799	B8	3A50	D4	3E69	A8	3L02	A8	3PF6	D3	5316	B4	5L11	A9	6P03	B2	7A62	E4	9305	C5	9ID1	E1	9U09	F8
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1I15	A6	2358	B5	2783	A7	2A29	D5	2AM8	E4	2E89	E9	2L41	A9	2PF1	B3	3021	C6	3437	B4	3820	B7	3AA9	E4	3I02	B2	3P08	B2	3PH4	B2	5706	E7	5P51	B2	6U06	F7	7E09	D9	9703	B8	9P13	D2		
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1P00	C2	2362	B5	2793	D7	2A33	D5	2AN7	E5	2I00	F4	2L45	A9	2S03	D4	3027	C6	3444	C4	3824	B7	3AB5	E4	3I09	A2	3P19	B1	3T05	A2	5718	D7	5PA3	B3	6U13	F7	7E16	D9	9715	D7	9P26	C2		
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1P10	C2	2368	B4	2803	B7	2A40	D5	2AO4	E3	2I09	A6	2L50	A9	2U04	E7	3058	C6	3461	C5	3832	D6	3AC8	E5	3I16	A3	3P28	C1	3U04	E8	5725	B7	5PA8	D3	6V23	A9	7E22	E9	9736	D7	9PA1	C2		
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1T01	A1	2377	C4	2806	B8	2A43	E5	2B06	E1	2I15	A2	2P03	B2	2U09	E7	3066	B6	3473	C5	3835	D5	3C01	B6	3I21	A3	3P34	C1	3U07	F7	5729	D6	5T02	A2	6V26	A9	7I08	A2	9744	B8	9PA4	D3		
1T02	A1	2379	B5	2807	B8	2A44	D5	2B07	E1	2I19	A8	2P04	B2	2U11	F7	3068	C6	3474	C4	3836	D7	3C03	A5	3I22	A3	3P35	C1	3U08	F7	5731	E7	5U01	F8	6V27	A9	7I11	E3	9745	B8	9PA5	C3		
1U01	F6	2380	B5	2808	B7	2A45	E5	2B08	E1	2I20	A8	2P05	B1	2U12	E7	3073	C6	3475	B4	3838	D8	3C06	B5	3I23	A2	3P41	D2	3U09	E8	5736	D6	5U02	F6	6V28	A9	7I12	E1	9746	B8	9PA6	C3		
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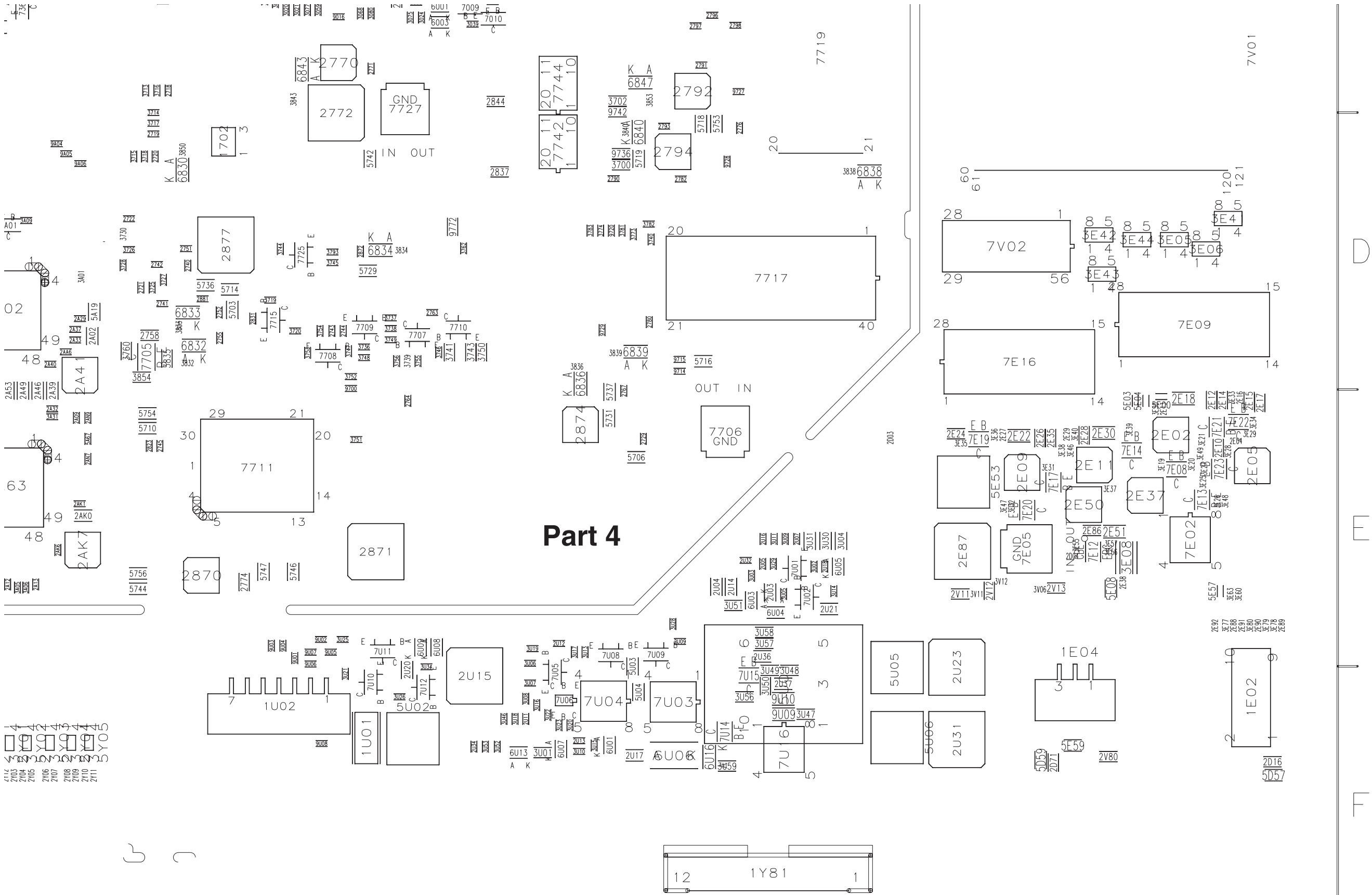
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Part 2

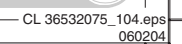
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Layout Small Signal Panel (Top Side Part 4)



A horizontal timeline with 9 numbered points (1 to 9) and vertical tick marks.



Layout Small Signal Panel Mapping (Bottom Side)

1301	B5	2385	B6	2828	C3	2AN5	E5	2E76	D2	2L05	B1	2P82	D7	2T16	A9	3054	B4	3407	A5	3A53	D5	3E24	D1	3IE7	A4	3L18	C1	3S10	C6	5A05	E6	6A02	D6	6T06	A9	7E11	A2	9413	B6	9IC5	A4
1305	B5	2386	C6	2830	A3	2AN6	E6	2E78	C2	2L06	C1	2P83	D7	2T17	A9	3055	B4	3408	B5	3A55	D5	3E45	D1	3IE8	A4	3L22	B1	3S11	D6	5A10	E6	6B00	D9	6T07	A9	7E15	D1	9415	B5	9IC6	A4
1306	B5	2387	B6	2832	C3	2AN8	E6	2E79	C1	2L07	C1	2P84	D7	2T18	A9	3056	B4	3410	A5	3A56	D5	3E50	E1	3IE9	A3	3L23	B1	3S12	C7	5A11	E6	6B01	D9	6T08	A9	7E18	E1	9418	A6	9IC7	A4
1307	B5	2390	B6	2833	C3	2AO7	E6	2E80	D1	2L08	B1	2P85	D7	2T19	A9	3057	B3	3414	B5	3A72	E7	3E51	E1	3IF0	A4	3L25	B1	3S13	D7	5A12	E5	6B02	E8	6U02	F3	7E24	D1	9420	B6	9ID3	F9
1308	B5	2402	B6	2834	D5	2AO8	E6	2E81	E1	2L09	B1	2P87	C8	2T20	A8	3061	B4	3415	B5	3A73	E7	3E52	C1	3IF2	F9	3L28	B1	3T03	A9	5A13	E5	6B03	D9	6U10	E2	7100	A8	9421	C6	9ID4	F9
1404	A3	2418	B5	2835	C3	2B00	E9	2E82	E1	2L10	C1	2P88	C8	2U01	F3	3062	C4	3417	B6	3A74	E7	3E53	C1	3IF3	F9	3P03	C8	3T04	A9	5A14	E5	6B04	D9	6U11	F4	7101	A5	9701	E5	9ID8	E8
1406	A6	2419	B5	2836	D5	2B01	E9	2E84	E1	2L11	B1	2P91	C9	2U02	E3	3064	C5	3419	A6	3A75	E7	3E62	C2	3IF4	F9	3P04	C8	3U12	F4	5A15	E5	6B05	D8	6U12	F4	7105	A6	9702	E4	9L03	B1
1407	B6	2420	C6	2839	C3	2B02	E9	2I04	A7	2L12	B1	2P92	C9	2U06	F3	3067	B5	3420	B6	3A76	E7	3E71	B1	3IF5	A4	3P05	C8	3U24	F4	5A20	D6	6B06	E9	6U14	F4	7106	B7	9709	C3	9L04	B1
1409	B5	2421	B6	2841	B3	2B03	E9	2I06	B7	2L13	B1	2P93	C9	2U08	F2	3069	C4	3421	B6	3A77	D7	3E73	C1	3IF6	A4	3P06	C8	3U27	F4	5A21	D6	6E54	D1	6U15	F4	7107	A8	9712	D2	9P04	B8
1410	B5	2422	B6	2842	C4	2B04	E9	2I07	A7	2L14	C1	2P94	C9	2U10	E3	3072	B4	3434	A5	3A78	E7	3E74	C1	3IF7	A3	3P09	B8	3U32	E2	5A64	E6	6E55	C1	6V01	D1	7109	A8	9713	D2	9P05	B9
1411	B5	2423	B6	2843	C3	2B05	E9	2I08	A8	2L15	C1	2P95	C8	2U19	F4	3079	C4	3435	B6	3A84	E7	3E75	C2	3IF8	F9	3P11	B9	3U33	E2	5A65	E6	6I03	E8	6V02	D2	7110	E8	9716	D3	9P07	C9
1A00	D5	2424	C6	2847	A2	2B10	E9	2I10	A6	2L16	C1	2P96	C8	2U22	F4	3081	B3	3441	B5	3AA2	E6	3E88	C1	3IF9	F9	3P12	B8	3U35	F4	5A66	E6	6I04	E8	6V03	D1	7113	F9	9717	D3	9P09	C9
1B01	D8	2426	A5	2849	C5	2B16	E8	2I11	A6	2L17	C1	2P97	C7	2U24	F4	3082	B4	3445	B6	3B00	E9	3E89	E2	3IH0	F6	3P13	B8	3U36	F4	5B00	E9	6I05	F9	6V30	B1	7114	F6	9721	C2	9P10	B8
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1P05	C8	2701	B2	2851	B2	2B18	E8	2I16	A5	2L21	B1	2PA1	C7	2U26	F4	3085	B4	3451	B6	3B02	E9	3I07	F6	3IH2	F5	3P15	B8	3U38	F4	5B02	E9	6I11	A6	6V32	B1	7116	F9	9723	D2	9P12	C9
1P07	C8	2702	B2	2852	C4	2B21	D9	2I17	A5	2L22	C1	2PA2	C7	2U27	E2	3086	B4	3452	B6	3B03	E9	3I08	A6	3IH3	F5	3P16	C8	3U39	F4	5B03	D9	6I12	A6	6V33	B1	7120	A8	9724	D2	9P16	B8
1P08	B9	2703	B2	2853	A3	2B22	D9	2I18	A4	2L23	C1	2PA3	C8	2U28	E2	3087	B4	3453	C6	3B04	E9	3I13	A7	3IH4	F6	3P21	C8	3U40	F4	5B04	D9	6I13	A6	7002	B5	7122	B8	9725	E4	9P17	C8
1P09	C9	2704	B2	2854	A3	2B23	D9	2I21	F9	2L24	C1	2PA9	C8	2U29	F2	3088	C4	3454	C6	3B05	E8	3I14	A7	3IH5	A8	3P22	C8	3U41	E4	5B07	D9	6I15	A7	7003	B5	7123	A8	9726	D5	9P18	C8
1P50	C8	2705	B2	2856	D5	2B24	D9	2I23	A5	2L25	C1	2PB0	C7	2U30	E2	3092	C4	3455	C5	3B06	E8	3I19	A7	3IH6	A8	3P23	C8	3U42	F4	5B08	E9	6I20	A7	7004	B5	7125	A5	9737	C4	9P20	C9
1Y01	F5	2706	B2	2857	A3	2B25	D9	2I24	A5	2L26	B1	2PB1	C7	2U33	F4	3093	B4	3456	B6	3B07	E8	3I20	A7	3IH7	B8	3P24	C8	3U43	F4	5B09	E9	6I21	A7	7007	A4	7128	A5	9743	C4	9P21	C8
2003	C4	2712	B2	2864	A3	2B26	D9	2I26	A2	2L27	B1	2PB2	C7	2U35	F4	3094	C5	3457	B5	3B08	E8	3I26	B7	3IH8	A8	3P31	C9	3U44	E2	5D51	A1	6I22	A5	7011	C4	7129	A5	9753	B3	9P22	C9
2010	C5	2713	E5	2865	A3	2B30	D8	2I27	A2	2L31	B1	2PD0	D8	2V06	D2	3095	C5	3459	C6	3B09	E8	3I27	B8	3IH9	A8	3P32	C9	3U45	E2	5D54	A1	6I23	A5	7012	C4	7132	A4	9758	C3	9P23	C8
2013	B3	2714	D5	2875	E4	2B31	D8	2I28	E8	2L32	B1	2PE9	D7	2V07	D2	3096	C5	3463	B5	3B10	E9	3I32	F6	3I10	A8	3P33	C8	3U54	F4	5D58	F1	6I24	A5	7015	C5	7140	F5	9760	E3	9P24	C9
2017	B5	2717	C3	2876	E4	2B36	D9	2I33	A3	2L52	C1	2PF2	B7	2V08	D2	3097	A3	3465	C6	3B11	E9	3I33	F6	3I11	B8	3P36	C9	3U55	F4	5E01	D1	6I25	A5	7016	C5	7141	F6	9761	E3	9P25	C9
2019	B4	2725	B3	2885	B3	2B37	D9	2I34	A3	2L53	B1	2PF5	B7	2V09	D1	3098	A4	3467	C6	3B15	D9	3I34	A6	3I12	B8	3P37	C8	3V03	D1	5E02	D1	6I26	A7	7020	C4	7142	F6	9A00	D5	9P28	C8
2022	C4	2726	C3	2899	D2	2B40	E9	2I35	A3	2L57	C1	2PF6	B7	2V10	D1	3100	C4	3468	B6	3B16	D9	3I35	A6	3I13	A8	3P38	C9	3V04	C2	5E05	D1	6I27	A4	7021	C4	7144	A6	9A01	D5	9P30	C9
2023	B4	2727	B3	2A01	D6	2B42	E9	2I36	A2	2L58	B1	2PF7	C8	2V14	D1	3101	C4	3470	C6	3B17	D9	3I36	A6	3I14	A8	3P39	C9	3V05	C2	5E06	E1	6I28	A6	7301	C5	7150	B7	9A02	D6	9P52	C7
2024	C4	2728	D2	2A05	D5	2B45	E9	2I37	F5	2L59	C1	2S01	B6	2V15	D1	3102	B4	3471	C6	3B18	D9	3I37	A6	3I15	A8	3P40	B9	3V07	D2	5E07	E1	6I29	A6	7302	C5	7L01	C1	9A03	D6	9P53	C7
2026	B4	2730	D2	2A07	D6	2B46	E9	2I38	A8	2L60	C1	2S02	C6	2V16	D1	3303	B6	3701	C4	3B19	E9	3I39	A2	3I16	A8	3P45	C8	3V08	D2	5E50	D1	6I30	A4	7303	C6	7L03	B1	9A08	D5	9P54	C7
2033	B4	2731	B2	2A19	D6	2B50	E9	2I39	A6	2L61	C1	2S06	D6	2V17	D1	3305	C6	3709	E5	3B20	E9	3I40	A7	3I17	A8	3P46	C8	3V14	D1	5E51	C2	6I31	A4	7305	C6	7P01	B8	9A09	D5	9P55	C8
2036	B4	2732	B2	2A28	E6	2B51	E9	2I40	F5	2L62	C1	2S07	D6	2V18	D2	3307	C6	3710	D5	3B21	E9	3I41	A7	3I1J	A8	3P47	C9	3V15	D1	5E55	B2	6I32	A4	7306	C6	7P03	C9	9B02	E8	9P56	C8
2038	B4	2733	A2	2A34	E6	2B52	D8	2I43	A8	2L63	B1	2S08	D6	2V19	D1	3308	C6	3711	B3	3B22	E9	3I48	A7	3I1J	A8	3P48	C8	3V16	D1	5E58	B1	6I33	A5	7307	B6	7P04	B9	9C02	A4	9P57	B8
2040	B4	2734	A3	2A38	E6	2B53	D8	2I44	A8	2P01	C8	2S09	C6	2V20	D2	3310	C6	3712	C4	3B23	E8	3I49	A7	3I1J	A8	3P50	C8	3V24	A2	5I02	E8	6I36	A4	7309	C6	7P06	C9	9E53	C1	9P58	B8
2041	B5	2736	B3	2A64	D6	2B54	E9	2I46	A8	2P09	C9	2S10	C6	2V21	D2	3311	C5	3722	D5	3B24	E8	3I50	A5	3I1J	F5	3P51	C8	3V25	A1	5I03	F5	6I43	A5	7310	C6	7P07	C9	9E54	C1	9P59	C9
2052	A4	2737	B3	2A69	D6	2B55	E9	2I47	A6	2P11	C9	2S11	D6	2V22	D2	3312	C6	3723	C4	3B25	E9	3I51	A5	3I1J	F6	3P52	C7	3V26	B1	5I04	F5	6I45	A5	7312	B5	7P11	C9	9I00	A7	9P60	B8
2053	A3	2738	B3	2A70	D6	2B56	E9	2I48	F9	2P12	C9	2S12	C6	2V23	D2	3313	C6	3724	C4	3B26	D9	3I52	A5	3I1K	B8	3P53	C8	3V28	B1	5I06	F7	6I46	A5	7313	C6	7P51	C7	9I01	A7	9P63	C7
2054	A3	2739	B3	2A72	D6	2B57	E8	2I51	F8	2P14	C9	2S13	C6	2V50	B1	3314	C6	3731	C5	3B27	D9	3I53	A5	3I1K	A5	3P54	C7	3V29	B1	5I07	E8	6I47	A5	7314	C6	7P52	C7	9I02	A7	9P64	B7
2055	A3	2746	E4	2A74	D6	2C00	B5	2I52	F9	2P15	C9	2S14	C6	2V56	B1	3315	C6	3732	D5	3B28	E9	3I54	F9	3I1K	A5	3P55	C7	3V32	B2	5I09	F8	6I48	A5	7315	C6	7P53	C7	9I03	A7	9P65	B8
2056	A3	2747	B2	2A79	D5	2C02	B5	2I53	F9	2P16	C9	2S																													

5

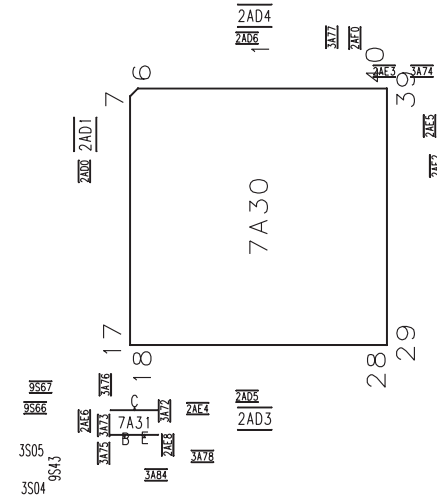


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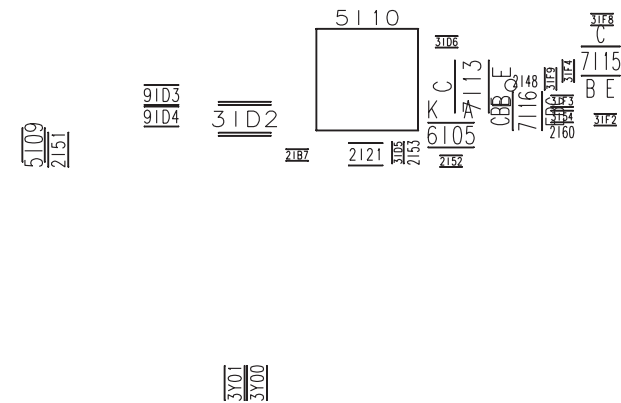
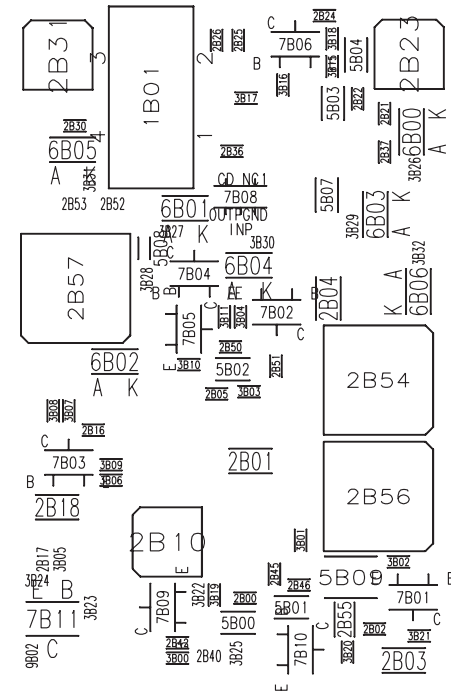


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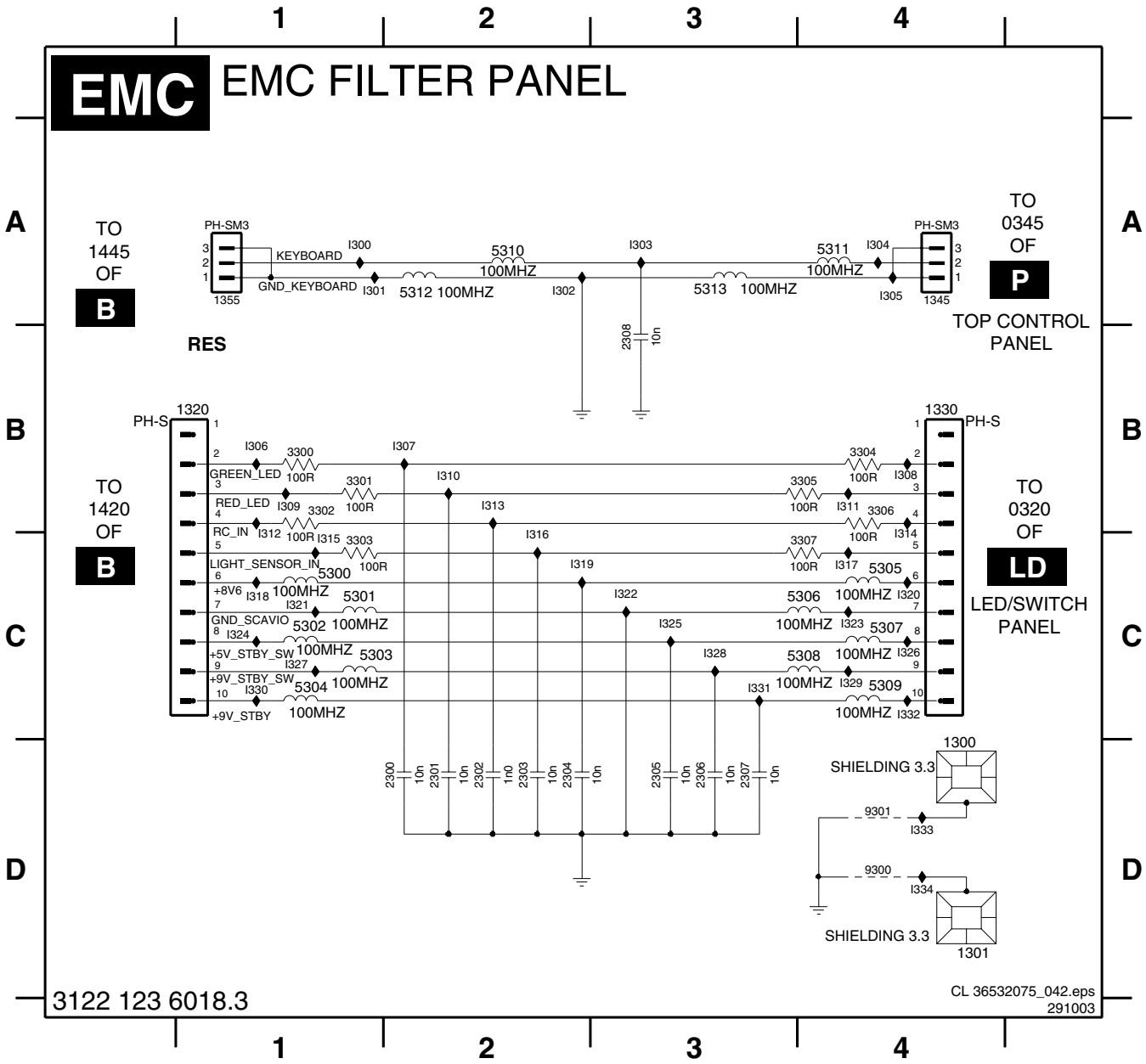


$\begin{array}{c} \text{K} \\ \text{---} \\ 6103 \\ \text{---} \\ \text{A} \end{array}$
 $\begin{array}{c} \text{A} \\ \text{---} \\ 9181 \\ \text{---} \end{array}$
 $\begin{array}{c} 9178 \\ \text{---} \end{array}$
 $\begin{array}{c} 2153 \\ \text{---} \end{array}$
 $\begin{array}{c} 3183 \\ \text{---} \\ \text{K} \end{array}$
 $\begin{array}{c} 5102 \\ \text{---} \end{array}$
 $\begin{array}{c} 9108 \\ \text{---} \\ \text{A} \end{array}$
 $\begin{array}{c} 9139 \\ \text{---} \\ \text{A} \end{array}$
 $\begin{array}{c} 5101 \\ \text{---} \\ \text{A} \end{array}$
 $\begin{array}{c} 2120 \\ \text{---} \\ \text{A} \end{array}$
 $\begin{array}{c} 6104 \\ \text{---} \\ \text{AK} \end{array}$



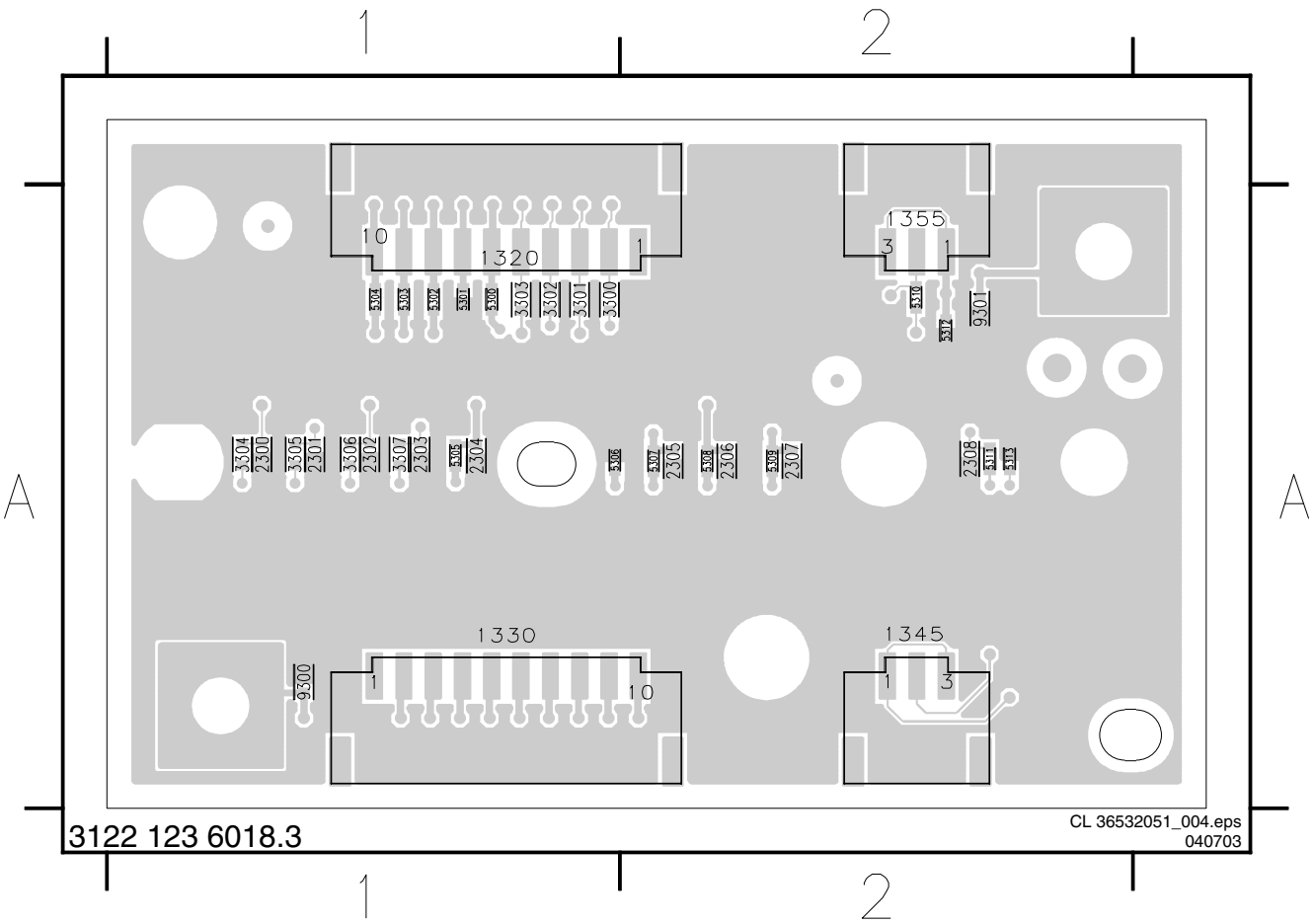
EMC Filter Panel

1300 D4	2301 D2	2308 A3	3306 B4	5305 C4	5312 A2	I303 A3	I310 B2	I317 C4	I324 C1	I331 C3
1301 D4	2302 D2	3300 B1	3307 C4	5306 C4	5313 A3	I304 A4	I311 B4	I318 C1	I325 C3	I332 C4
1320 B1	2303 D2	3301 B1	5300 C1	5307 C4	9300 D4	I305 A4	I312 C1	I319 C2	I326 C4	I333 D4
1330 B4	2304 D2	3302 B1	5301 C1	5308 C4	9301 D4	I306 B1	I313 B2	I320 C4	I327 C1	I334 D4
1345 A4	2305 D3	3303 C1	5302 C1	5309 C4	I300 A1	I307 B2	I314 C4	I321 C1	I328 C3	
1355 A1	2306 D3	3304 B4	5303 C1	5310 A2	I301 A1	I308 B4	I315 C1	I322 C3	I329 C4	
2300 D2	2307 D3	3305 B4	5304 C1	5311 A4	I302 A2	I309 B1	I316 C2	I323 C4	I330 C1	

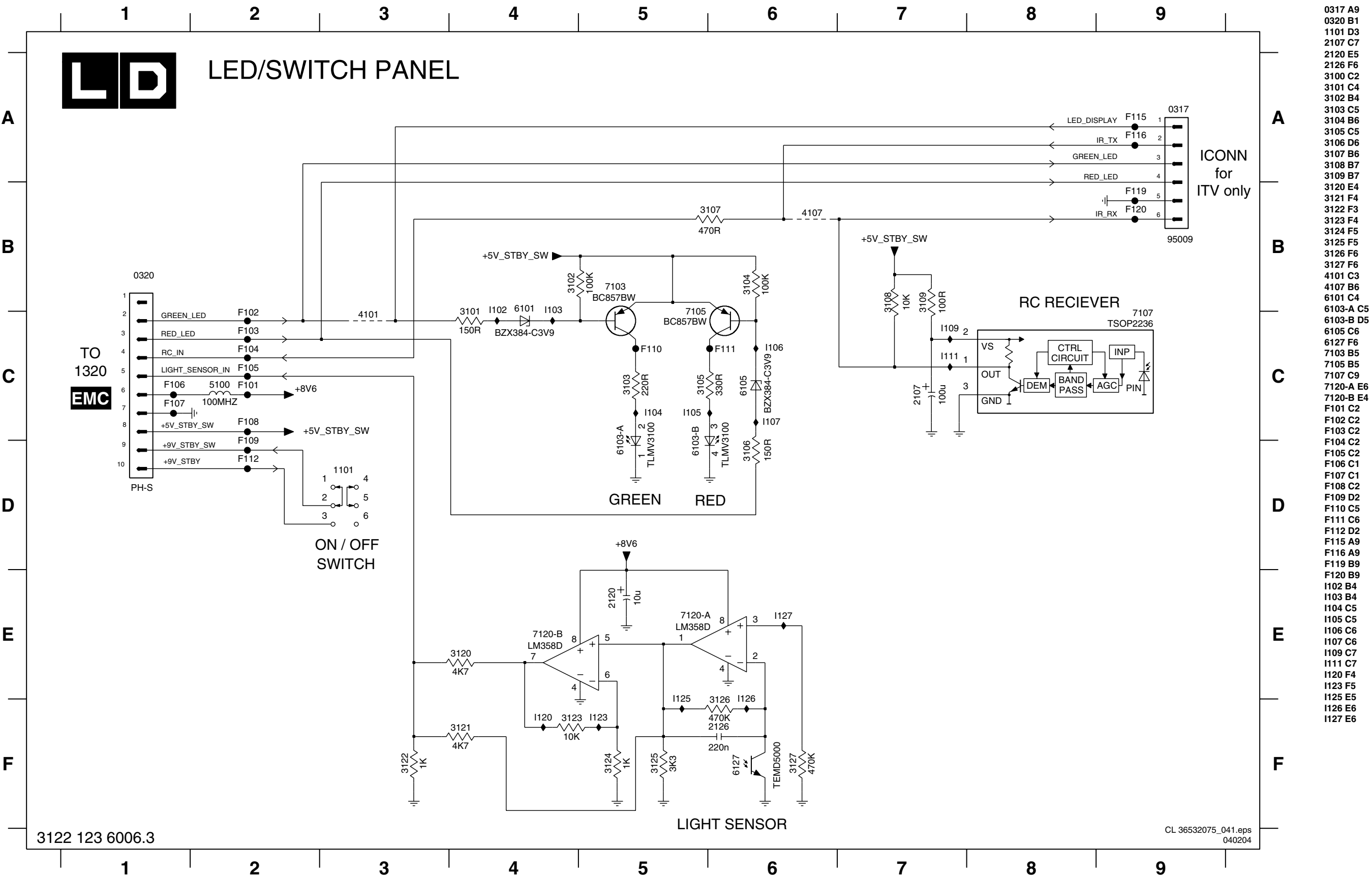


Layout EMC Filter Panel

1320 A1	2300 A1	2304 A1	2308 A2	3303 A1	3307 A1	5303 A1	5307 A2	5311 A2	9301 A2
1330 A1	2301 A1	2305 A2	3300 A1	3304 A1	5300 A1	5304 A1	5308 A2	5312 A2	
1345 A2	2302 A1	2306 A2	3301 A1	3305 A1	5301 A1	5305 A1	5309 A2	5313 A2	
1355 A2	2303 A1	2307 A2	3302 A1	3306 A1	5302 A1	5306 A1	5310 A2	9300 A1	

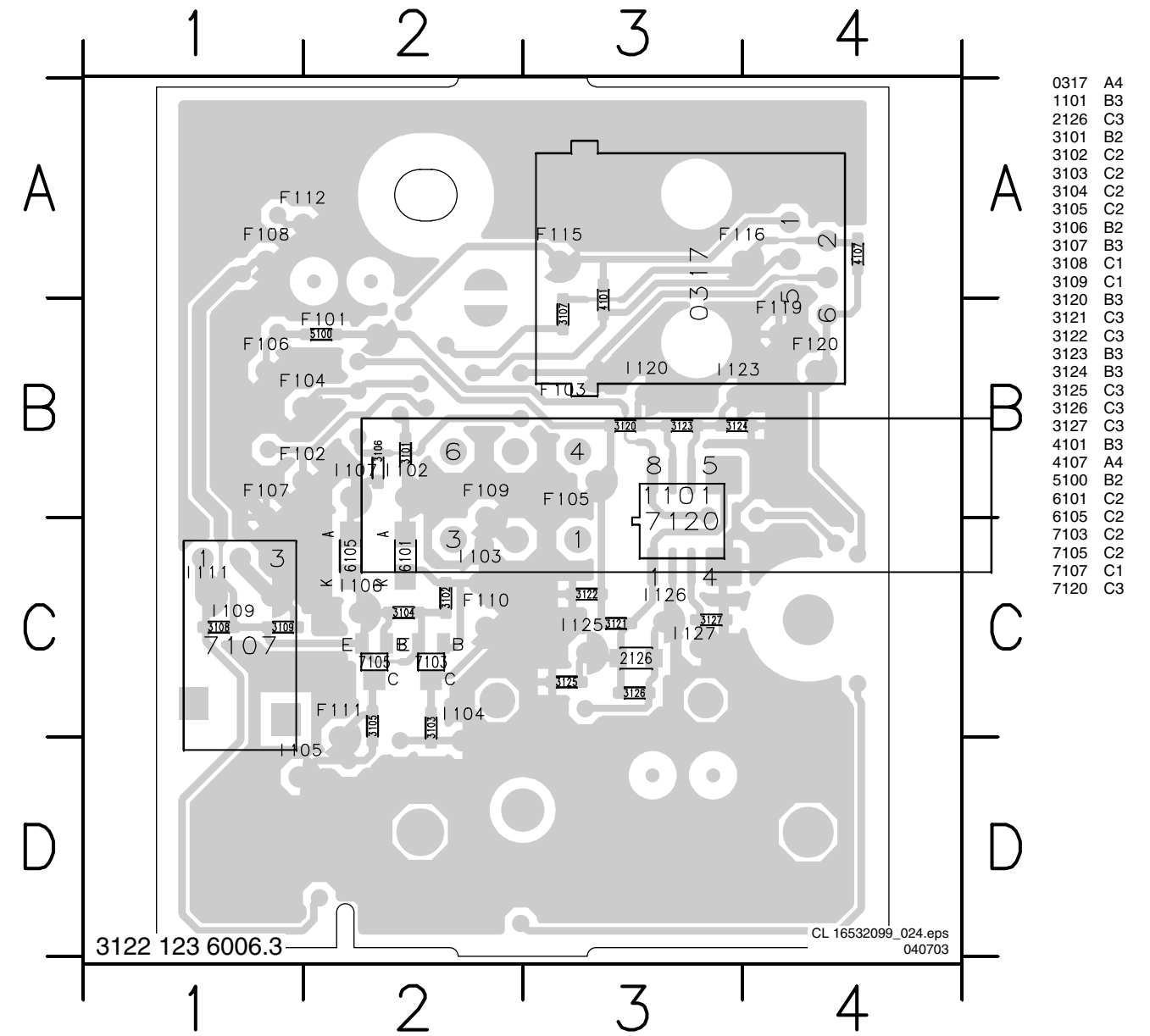
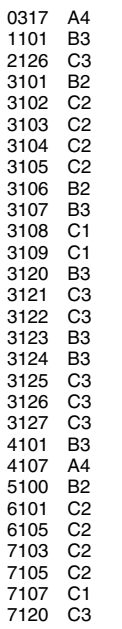


LED/Switch Panel

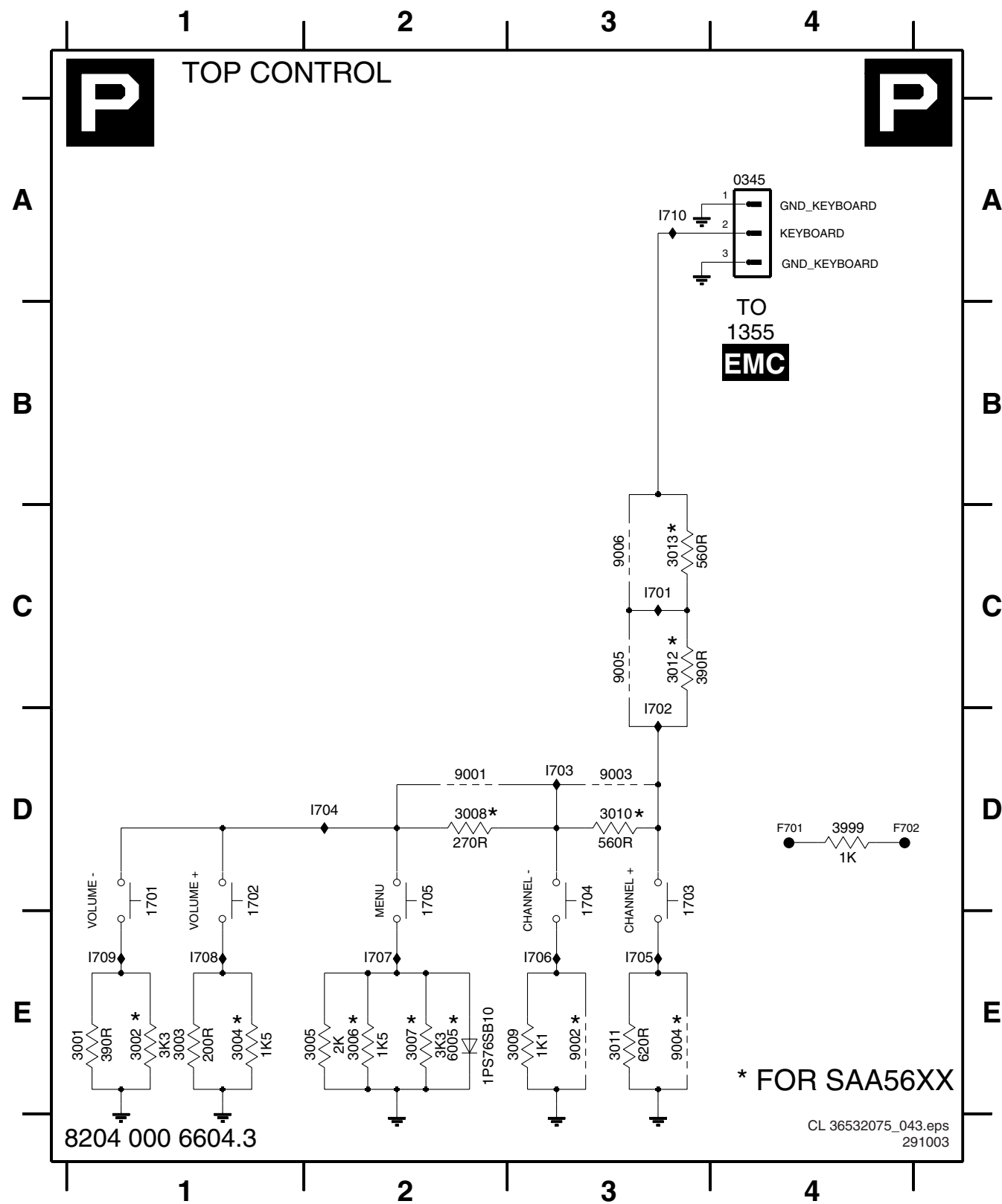


- 0317 A9
- 0320 B1
- 1101 D3
- 2107 C7
- 2120 E5
- 2126 F6
- 3100 C2
- 3101 C4
- 3102 B4
- 3103 C5
- 3104 B6
- 3105 C5
- 3106 D6
- 3107 B6
- 3108 B7
- 3109 B7
- 3120 E4
- 3121 F4
- 3122 F3
- 3123 F4
- 3124 F5
- 3125 F5
- 3126 F6
- 3127 F6
- 4101 C3
- 4107 B6
- 6101 C4
- 6103-A C5
- 6103-B D5
- 6105 C6
- 6127 F6
- 7103 B5
- 7105 B5
- 7107 C9
- 7120-A E6
- 7120-B E4
- F101 C2
- F102 C2
- F103 C2
- F104 C2
- F105 C2
- F106 C1
- F107 C1
- F108 C2
- F109 D2
- F110 C5
- F111 C6
- F112 D2
- F115 A9
- F116 A9
- F119 B9
- F120 B9
- I102 B4
- I103 B4
- I104 C5
- I105 C5
- I106 C6
- I107 C6
- I109 C7
- I111 C7
- I120 F4
- I123 F5
- I125 E5
- I126 E6
- I127 E6

Layout LED/Switch Panel (Bottom Side)



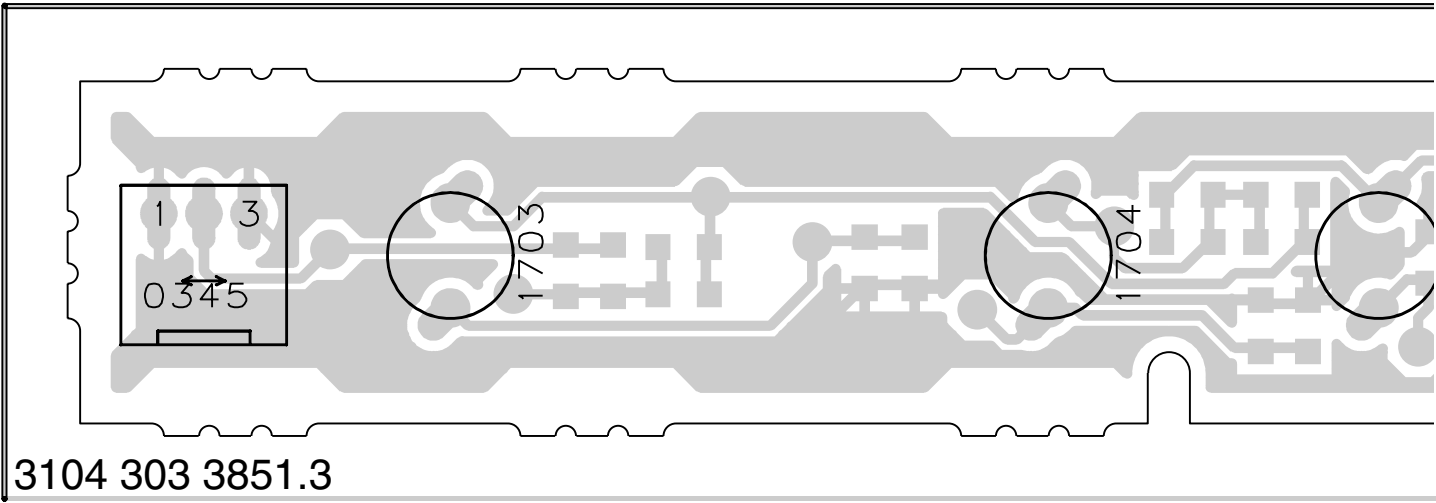
0345 A4	1704 D3	3003 E1	3007 E2	3011 E3	6005 E2	9004 E3	F702 D4	I704 D2	I708 E1
1701 D1	1705 D2	3004 E1	3008 D2	3012 C3	9001 D2	9005 C3	I701 C3	I705 E3	I709 E1
1702 D1	3001 E1	3005 E2	3009 E3	3013 C3	9002 E3	9006 C3	I702 D3	I706 E3	I710 A3
1703 D3	3002 E1	3006 E2	3010 D3	3999 D4	9003 D3	F701 D4	I703 D3	I707 E2	



Personal Notes:

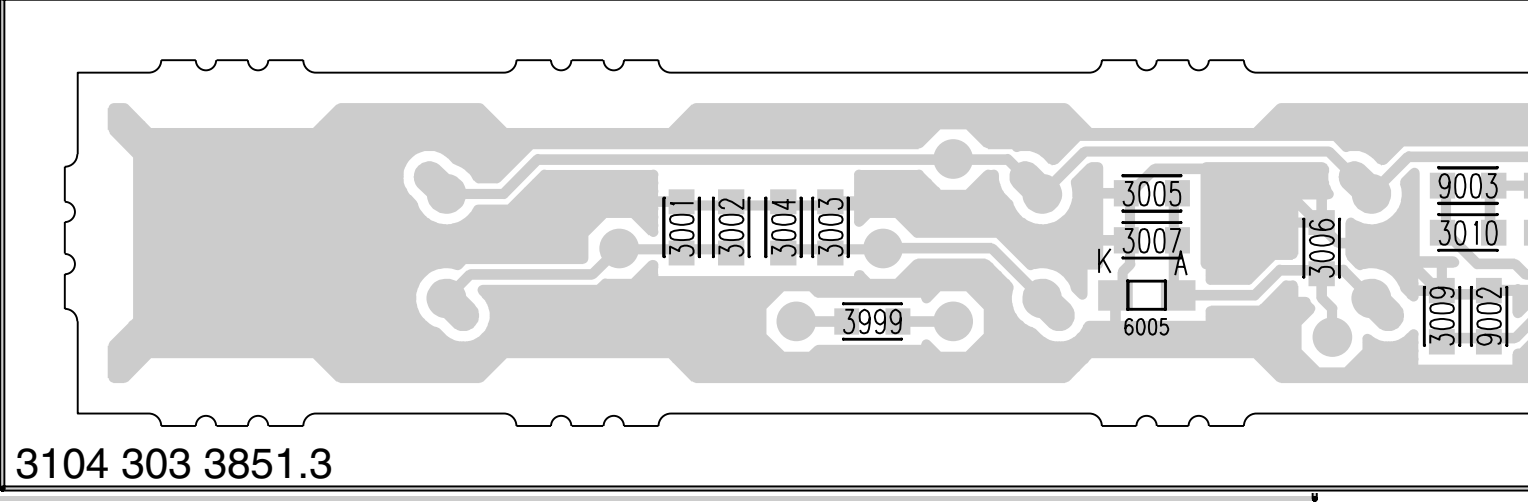
Layout Top Control Panel (Top Side)

0345 1701 1702 1703 1704 1705



Layout Top Control Panel (Bottom Side)

3001 3003 3005 3007 3009 3011 3013 6005 9002 9004 9006
3002 3004 3006 3008 3010 3012 3999 9001 9003 9005



[illegible]

8. Alignments

Index of this chapter:

1. General alignment conditions
2. Hardware alignments
3. Software alignments
4. Option settings

8.1 General Alignment Conditions

8.1.1 Start Conditions

Perform all electrical adjustments under the following conditions:

- Power supply voltage: 120 V_{ac} / 60 Hz ($\pm 10\%$).
- Connect the set to the mains via an isolation transformer with low internal resistance.
- Allow the set to warm up for approximately 20 to 30 minutes.

8.1.2 Initial Settings

Perform all electrical adjustments with the following initial settings (via the "Active Control" button on the RC):

1. To avoid the working of the light sensor, set "Active Control" to "Off".
2. Set "Auto Picture" to "Natural".
3. Set "Active Display" to "Off".
4. Set "Contrast" to max (= 100).

8.2 Hardware Alignments

There are no alignments needed, except in case the PDP itself or the PDP-supply has been exchanged. In that case, both must be matched.

Va	Vsc	Vs	Ve	Vset		REMARKS
Variable	Variable	Variable	Variable	Variable		Variable per set
VSB	+3.3SBSW	Vcc	D5V	8V6	VFAN	
5.2V	3.3V	3.3V	5.2V	8.6V	12V	Fixed for all sets

VOLTAGE ADJUST DIRECTION

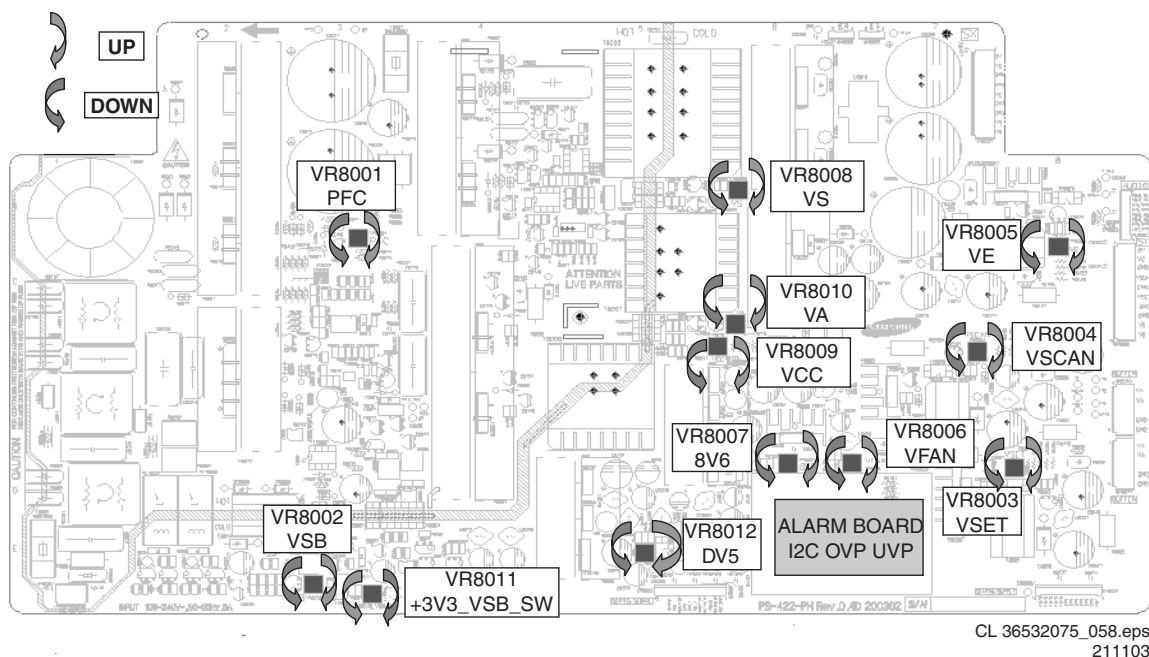


Figure 8-1 Supply Alignment

Procedure:

- The potentiometers influencing VSB, 3.3SBSW, VCC, D5V, 8V6, and VFAN are not critical for matching. In case of doubt, check the values versus the mentioned voltages.
- Match the potentiometers VS, VA, VSET, VE, and VSC with the values displayed on the PDP-label.
- Start with aligning potmeter VR8008 to adjust VS and then respectively VR8010 (Va), VR8003 (Vset), VR8005 (Ve), and VR8004 (Vsc).
- To double check, repeat the whole sequence again.

8.3 Software Alignments

Put the set in SAM mode (see the "Service Modes, Error Codes and Fault Finding" section). The SAM menu will now appear on the screen. Select ALIGNMENTS and go to one of the sub menus. The alignments are explained below.

Notes:

- Changes must be stored manually before leaving the SAM.
- If an empty EARM (permanent memory) is detected, all settings are set to pre-programmed default values.

8.3.1 GENERAL**LUMA GAIN**

Fixed setting of "1".

IF AFC

Supply, via a service generator or via off-air, a NTSC TV-signal with a signal strength of at least 1 mV and a frequency of 61.25 MHz. Alignment procedure:

1. During the IF AFC-parameter adjustment, one can see OSD feedback on the screen.
2. The OSD feedback at the top of the screen can give 4 kinds of messages:
 1. The first item (IN/OUT) informs you whether you are in or out of the AFC-window.
 2. The second item (HIGH/LOW) informs you whether the AFC-frequency is too high or too low.
 3. Adjust the IF AFC parameter until the **first** value is within the AFC window (= IN).
 4. Next, adjust the IF AFC parameter until the **second** value is LOW.

Table 8-1 AFC OSD feedback of AFC alignment

AFC-window	AFC-frequency vs. reference
Out	High
In	High
[In]	[Low]
Out	Low

TUNER AGC

1. Connect the RF output of a video pattern generator to the antenna input.
2. From the generator, input a NTSC TV signal with a signal strength of approximately 2 mV and a frequency of 61.25 MHz.
3. Measure the DC voltage on pin 1 of the (main) Tuner. You can adjust this voltage by adjusting the TUNER AGC item in the SAM menu. Alignment is correct when the DC voltage is just below 3.5 V.

BLEND INTENSITY

Use this alignment when you replace the microcontroller, NVM, or the EBILD. It aligns the level of transparency of the menu-picture blended into the main-picture. Fixed setting of "16".

FBX TESTPATTERN (if present)

This function makes it possible to generate a test pattern varying from full black to full white in eight steps. You can use this pattern to check the video path, starting at the FBX to the plasma display. The pattern is generated by the Eagle (IC7724) for Pixel Plus sets, or by the PICNIC (IC7713) for non-Pixel Plus sets.

Note: This test pattern can also be very useful for checking the display for pixel failures.

8.3.2 2FH ADC ALIGNMENT

Only necessary to align, when the EPLD or NVM is replaced. Use the default values as mentioned in the table.

Table 8-2 ADC Alignment Default values "2fH ADC" alignment

Menu item	Value
Red Gain RGB	111
Blue Gain RGB	117
Green Gain RGB	157
-	
Red Offset RGB	59
Blue Offset RGB	52
Green Offset RGB	46
-	
Red Gain YPBPR	111
Blue Gain YPBPR	117
Green Gain YPBPR	137
-	
Red Offset YPBPR	59
Blue Offset YPBPR	52
Green Offset YPBPR	46

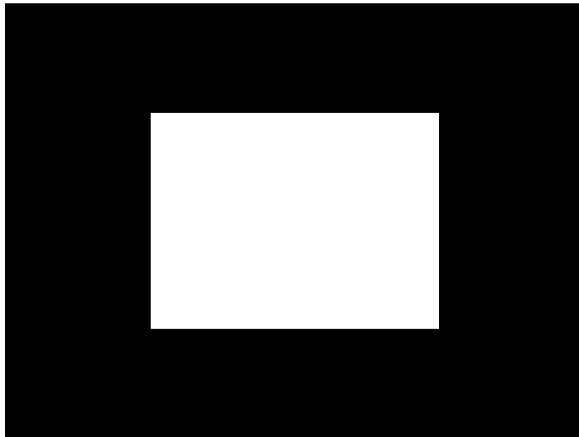
8.3.3 WHITE POINT**Table 8-3 Starting values "white point" alignment.**

Menu item	Alignment value
Test Pattern	No (no function).
-	
WhitePointRed	127 (in "Normal").
WhitePointGreen	127 (in "Normal").
WhitePointBlue	127 (in "Normal").
-	
Red BL offset	7
Green BL offset	7
-	
Color Temperature	Normal (Warm/Cool).

Ignore the "Test Pattern" item in the alignment menu, this is not implemented.

Method 1 (with color analyzer)

1. Supply, via an external VGA source (e.g. a PC with 640x480 mode, or a VGA generator), a "White Drive" test pattern (ask your NSO for the file). This picture consists of a black picture with in the middle a 100% white square (see figure "White drive test pattern").
2. Select the color temperature to adjust (start with NORMAL).
3. Measure with a CTV color analyzer (calibrated with the spectra) on the center of the white square on the screen.
4. Adjust with the CURSOR UP/DOWN or LEFT/RIGHT command, the three white points Red, Green, and Blue. Max. value is 127. Align with one or two of the drivers to the correct coordinates (see table of color coordinates).
5. Repeat the same measurement for respectively color temperature WARM and COOL.



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300104

Figure 8-2 White drive test pattern

Table 8-4 Color coordinates

Color Temp.	x	y
Warm (6500 K)	0.313	0.329
Normal (9400 K)	0.285	0.290
Cool (11500 K)	0.269	0.289

Method 2 (without color analyzer)

Without a CTV color analyzer, it is possible to set some parameters, which are based on average values from production.

Table 8-5 Average RGB values

Color Temp.	R	G	B
Warm (6500 K)	127	119	107
Normal (9400 K)	127	122	124
Cool (11500 K)	119	125	127

8.3.4 LUM. DEL

With this Luminance Delay alignment, you place the luminance information exactly on the chrominance information (brightness is pushed onto the color). Use a color bar / grey scale pattern as test signal.

- **LUM. DELAY PAL BG:** Apply a PAL BG color bar / grey scale pattern as a test signal. Adjust this parameter until the transients of the color part and black and white part of the test pattern are at the same position. Default value is "8". Press "OK" after alignment.
- **LUM. DELAY PAL I:** Apply a PAL I color bar/grey scale pattern as a test signal. Adjust this parameter until the transients of the color part and black and white part of the test pattern are at the same position. Default value is "8". Press "OK" after alignment.
- **LUM. DELAY SECAM:** Apply a SECAM color bar/grey scale pattern as a test signal. Adjust this parameter until the transients of the color part and black and white part of the test pattern are at the same position. Default value is "7". Press "OK" after alignment.
- **LUM. DELAY BYPASS:** apply a NTSC color bar/grayscale pattern as a test signal. Adjust this value until the transients of the color and black and white part of the test area are at the same position. Default value is "6". Press "OK" after alignment.

8.4 Option Settings

8.4.1 Introduction

The microprocessor communicates with a large number of I2C ICs in the set. To ensure good communication and to make digital diagnosis possible, the microprocessor has to know which ICs to address. The presence / absence of these specific ICs (or functions) is made known by the option codes.

Notes:

- After changing the option(s), save them with the STORE command.
- The new option setting is only active after the TV is switched "off" and "on" again with the Power switch (the EARM is then read again).

8.4.2 DEALER OPTIONS

Table 8-6 Dealer options overview

Menu name	Subjects	Options	Description
Personal Options	Picture Mute	Yes	Picture mute active in case no picture detected
		No	Noise in case of no picture detected
	Virgin Mode	Yes	TV starts up (once) with language selection menu after power switch "on" for the first time (virgin mode)
		No	TV does not starts up (once) with language selection menu after power switch "on" for the first time (virgin mode)

8.4.3 SERVICE OPTIONS

Select the sub menu's to set the initialization codes (options) of the set via text menus.

Table 8-7 Option overview

Menu-item	Subjects	Options	Description
Display Options	Display Technology	PDP	Fixed value.
	Size	37"	Panel size (in inches).
		42"	Panel size (in inches).
	Display type	16:9	Widescreen screen format.
		4:3	"Classic" screen format.
Video Repro	Featurebox type	Falconic	No "Eagle" present.
		Eagle	"Eagle" present.
	Lightsensor	Yes	Feature present.
		No	Feature not present.
	3D Combfilter	Yes	Feature present.
		No	Feature not present.
	Picture improvement	Yes	LTP (TOPIC) present.
		No	LTP (TOPIC) not present.
Audio Repro	AVL	Yes	Automatic Volume Limiter, available in menu.
		No	Automatic Volume Limiter not available in menu.
Miscellaneous	Tuner type	UV1338	Set with Philips tuner.
		TEDE9	Set with Alps tuner.
Option no.	Group 1		Group 1 option code overview (see set sticker).
	Group 2		Group 2 option code overview (see set sticker).

OPT. NO. (Option numbers)

Select this sub menu to set all options directly (expressed in two long strings of numbers).

An option number (or "option byte") represents a number of different options. When you change these numbers directly, you can set all options very quickly. All options are controlled via eight option numbers.

When the EAROM is replaced, all options will require resetting. To be certain that the factory settings are reproduced exactly, you must set both option number lines. You can find the correct option numbers on a sticker inside the TV set on the metal frame.

Example: The options sticker gives the following option numbers:

- 08259 00032 00268 00000
- 00016 00048 00000 05184

The first line (group 1) indicates options 1 to 4, the second line (group 2) options 5 to 8 (see tables further on).

Every 5-digit number represents 16 bits (so the maximum number will be 65536 if all options are set).

When all the correct options are set, the sum of the decimal values of each Option Byte (OB) will give the option number.

Service tip: An easy way to check the option numbers is:

1. Convert the decimal option number (as given on the options sticker) to a binary number (e.g. by means of the "scientific" calculator that comes with MS Windows^(R)). To give an **example**: OB3= 49408 (dec)= 1100000100000000 (16 bits binary)
2. Use this binary number to check against the bits as mentioned in the tables below. This means in above-mentioned **example**, that Bit 8, 14, and 15 are "1" (means "set"), and that the rest is "0". So, actually this means that the options "Aspect Ratio" (Bit 8), "Home Cinema" (Bit 14), and "Integrated RC" (Bit 15) are set for this particular model.

Table 8-9 Option bytes Group 2

Byte nr.	Bit nr.	Decimal values	Option name	Settings (in decimal values)		Option Byte value
OB5	0	1	n.a.	0		OB5 = sum of the "on" bits (decimal)
	1	2	Auto Store Mode	0 = None (US/LA/AP-N)	2 = PDC/VPS (EU)	
	2	4			4 = TXT Page (EU)	
					6 = PDC/VPS/TXTpage (EU)	
	3	8	n.a.	0		
	4	16	Picture Mute	0 = Off	16 = On	
	5	32	n.a.	0		
	6	64	Virgin Mode	0 = Off	64 = On	
	7	128	n.a.	0		
	8	256	n.a.	0		
	9	512	n.a.	0		
	10	1024	n.a.	0		
	11	2048	n.a.	0		
	12	4096	TXT Preference	0 = TOP	4096 = FLOF	
	13	8192	n.a.	0		
	14	16384	n.a.	0		
	15	32768	n.a.	0		
OB6	0	1	P50 DVD menu-line	0 = Off (US/LA/AP)	1 = On (EU)	OB6 = sum of the "on" bits (decimal)
	1	2	n.a.	0		
	2	4	n.a.	0		
	3	8	n.a.	0		
	4	16	Region	0 = EU	16 = AP PAL-multi	
	5	32			32 = AP NTSC	
	6	64			48 = US	
	7	128				
	8	256	n.a.	0		
	9	512	n.a.	0		
	10	1024	n.a.	0		
	11	2048	n.a.	0		
	12	4096	n.a.	0		
	13	8192	n.a.	0		
	14	16384	n.a.	0		
	15	32768	n.a.	0		
OB7	0	1	n.a.	0		OB7 = sum of the "on" bits (decimal)
	1	2	n.a.	0		
	2	4	n.a.	0		
	3	8	n.a.	0		
	4	16	n.a.	0		
	5	32	n.a.	0		
	6	64	n.a.	0		
	7	128	n.a.	0		
	8	256	n.a.	0		
	9	512	n.a.	0		
	10	1024	n.a.	0		
	11	2048	n.a.	0		
	12	4096	n.a.	0		
	13	8192	n.a.	0		
	14	16384	n.a.	0		
	15	32768	n.a.	0		
OB8	0	1	n.a.	0		OB8 = sum of the "on" bits (decimal)
	1	2	n.a.	0		
	2	4	n.a.	0		
	3	8	n.a.	0		
	4	16	n.a.	0		
	5	32	n.a.	0		
	6	64	AVL	0 = Off	64 = On	
	7	128	n.a.	0		
	8	256	Picture tube size	0 = 30 inch	256 = 32 inch	
	9	512			512 = 37 inch	
	10	1024			1024 = 42 inch	
	11	2048				
	12	4096	Display type	0 = LCD	4096 = PDP	
	13	8192				
	14	16384	n.a.	0		
	15	32768	n.a.	0		

Notes:

- n.a.= not applicable.
- AP-P= Asian Pacific PAL-multi, AP-N= Asian Pacific NTSC, EU= Europe, LA= Latin America, US= NAFTA.

9. Circuit Descriptions, Abbreviation List, and IC Data Sheets

Index of this chapter:

1. Introduction
2. Block diagram
3. Power supply
4. Input/Output (I/O)
5. Video Processing
6. Audio
7. Synchronization
8. Control
9. Protections
10. PDP Panel
11. Software upgrading
12. Abbreviation list
13. IC Data Sheets

Notes:

- Only **new** circuits (circuits that are not published recently) are described.
- For the already "known" circuits, see R8 and FM24 manual.
- Figures can deviate slightly from the actual situation, due to different set executions.
- For a good understanding of the following circuit descriptions, please use the Wiring, Block and Circuit diagrams. Where necessary, you will find a separate drawing for clarification.
- Where EBILD (Eagle Based Intelligent LCD Driver) is mentioned, please note that the SW for this programmable device is optimized for PDP.

9.1 Introduction

The FTP11 is a 42-inch integrated (means: without separate tuner box) PDP flat screen set, which uses the FTL13 SSP architecture: a full panel with integrated (shielded) Feature Box as in the former MG-chassis. This approach gives better EMC / crosstalk behavior and less cables.

This chassis has the following (new) features:

- OTC2.5 microprocessor.
- HIP for analog input processing.
- MSP sound decoder for Virtual Dolby.
- FBX7 with Falconic/Eagle configuration and YUV output.
- The HOP part (as used in CRT sets) is replaced by an Erasable Programmable Logic Device (EPLD or EBILD) for driving the plasma panel.
- The EBILD delivers the signals to the LVDS transmitter that drives the PDP.
- This chassis has no PIP, no FDW, and no CC/TXT-DW.
- Also, features like Dolby, DVD-loader, HDD, and/or radio are not present.
- Next step "Active Control" with two new bars ("Motion" and "Tint Control" bar), four split demos, etc.
- Upgradeable **main** software (via ComPair).

The SSP is a high tech module (four layer, 2 sides reflow technology, full SMC) with very high component density and partial shielding (FBX, EBILD) for EMC-reasons. Despite this, it is designed in such a way, that repair on component level is possible. To achieve this, attention was paid to:

- Clearance around surface mounted ICs (for replacing).
- Detailed diagnostics and fault finding is possible via ComPair.
- Software upgrading is possible via ComPair.

Further features of the SSP are:

- The 3D Comb filter functionality is integrated on the SSP.
- The rear I/O connections are integrated on the SSP, even as the tuner.
- DVI input.

On the photographs you can see where all the functional cells are located on the SSP:

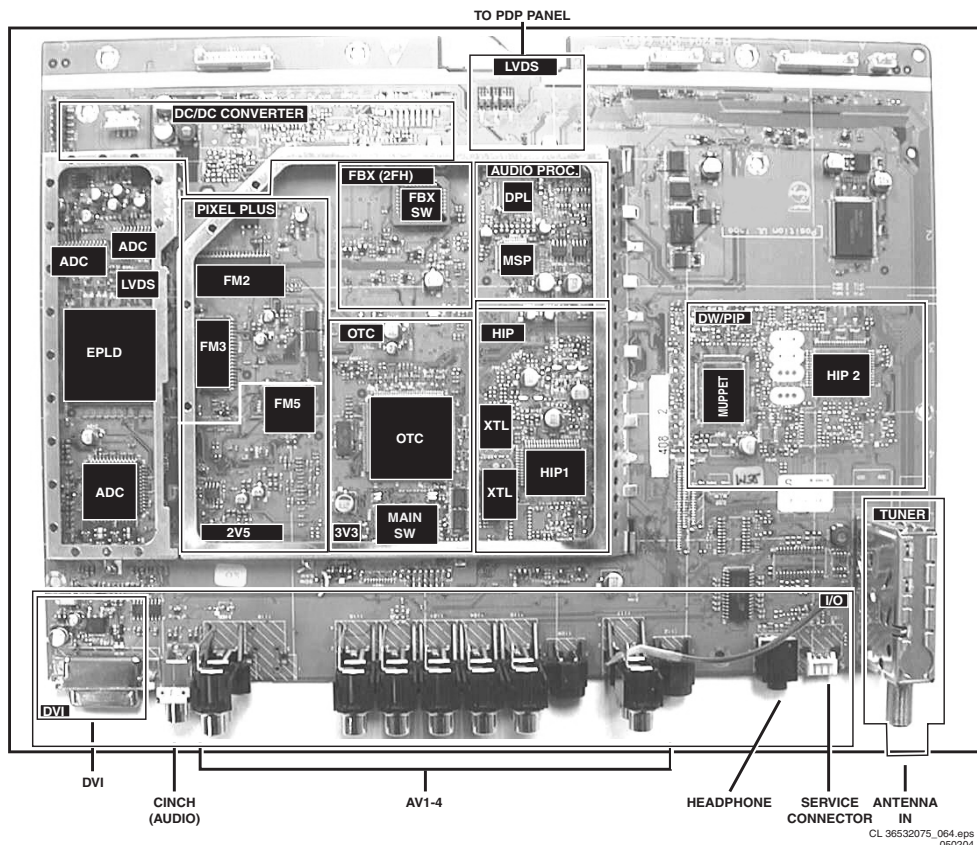


Figure 9-1 SSP top view (Note: this is an example, the cell usage depends on set execution)

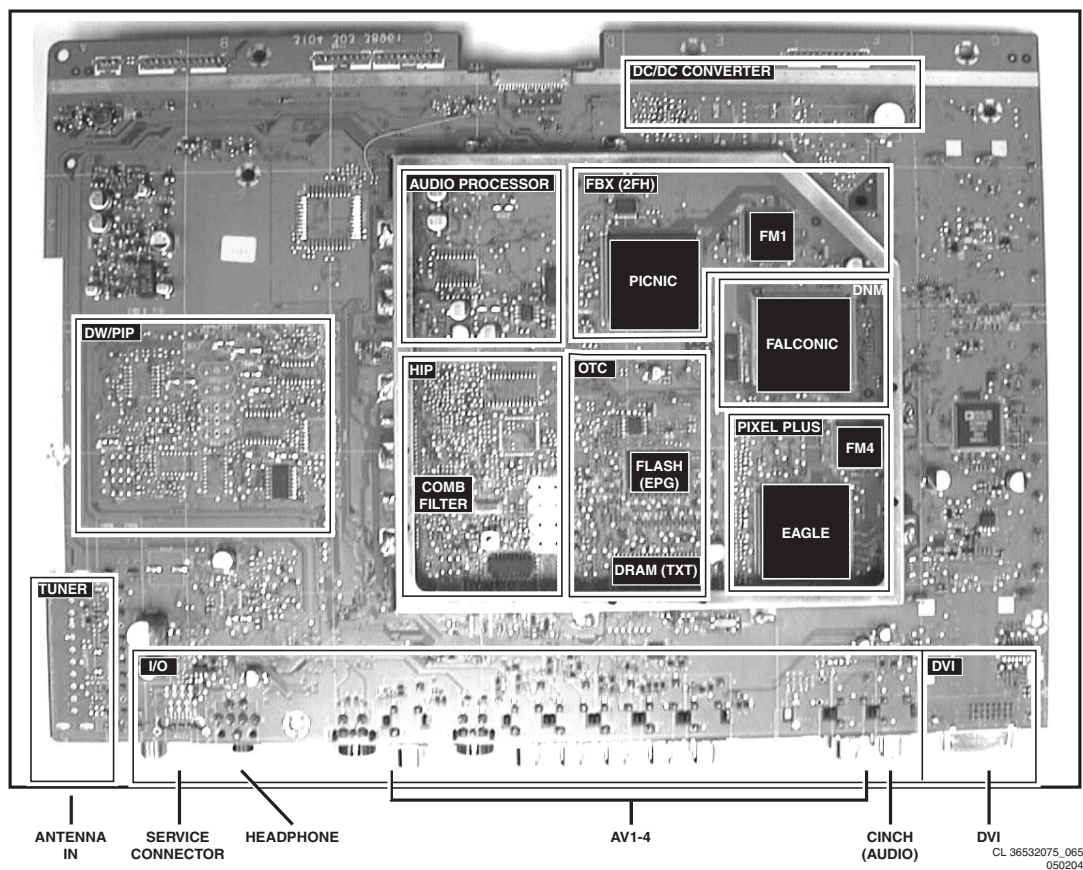


Figure 9-2 SSP bottom view (Note: this is an example, the cell usage depends on set execution)

9.2 Block Diagram

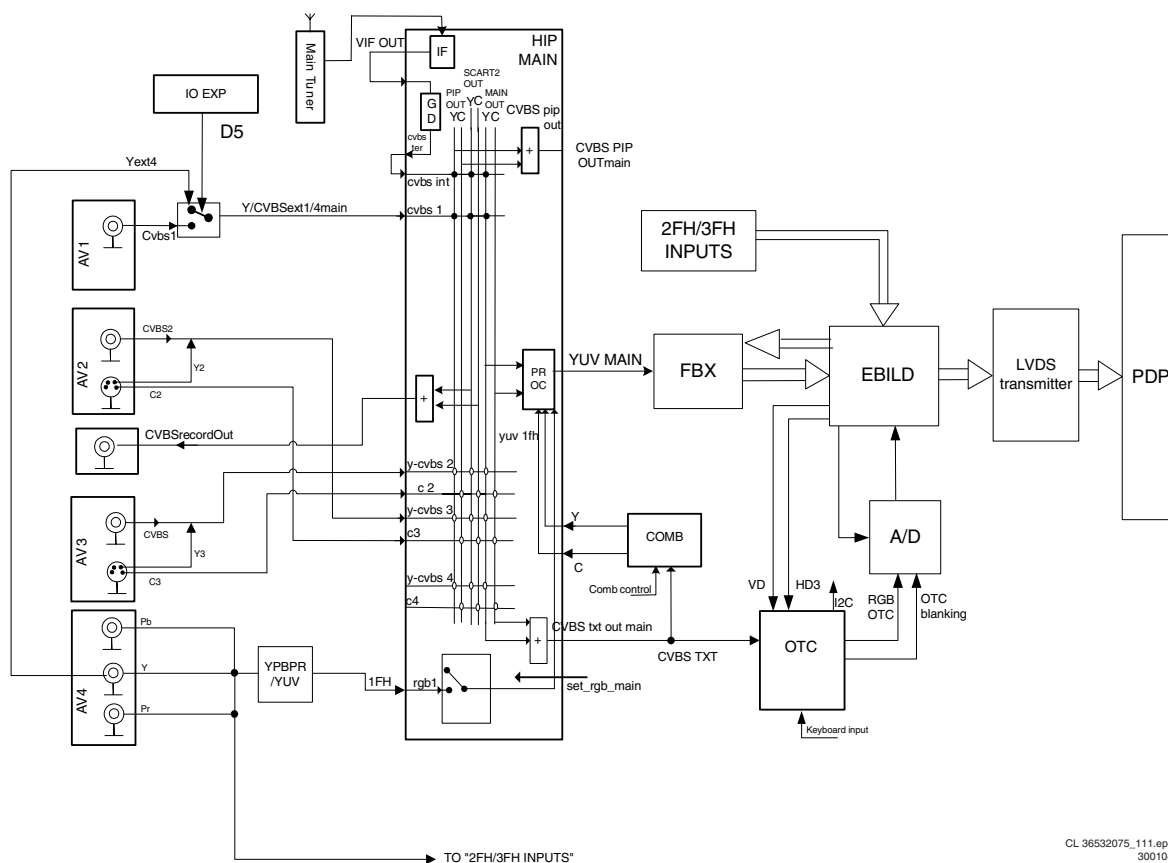


Figure 9-3 Chassis block diagram

The main tuner is a PLL tuner and delivers the IF-signal, via audio and video SAW-filters, to the main HIP (High-end Input Processor). This HIP has the following functions:

- IF modulation.
- Video source select and record select (for 1fH inputs).
- Color decoder.
- Synchronization.

The following video input/output connections (with audio connections) are available:

- AV1 with CVBS (1fH).
- AV2 with CVBS and Y/C (1fH).
- AV3 with CVBS and Y/C (1fH).
- AV4 with YPbPr with Sync-On-Y (480p, 576p, 1080i - 1fH/2fH/3fH).
- AV5 with DVI-D (480p, 576p, 1080i - 2fH/3fH).

The HIP delivers YUV and H/V-sync signals to the PICNIC (in the Feature Box). This IC takes care of:

- Analogue to Digital conversion and vice versa.
- 2fH processing
- Interlaced to progressive scan conversion.
- Panorama mode.
- Noise reduction.
- Dynamic contrast.

After the PICNIC, the YUV-signals are fed to the FALCONIC for "Natural Motion", followed by the Eagle for picture enhancement and scaling. The processed YUV signals (from Eagle or PICNIC) are, together with the sync-signals from the PICNIC, then fed to the EBILD (Eagle Based Intelligent LCD Driver). This programmed IC handles the video control. The RGB-signals for CC/OSD (from the uP) are also inserted via this IC. The video part delivers the RGB signals to the PDP-panel.

The sound part is built around an MSP (Multi-channel Sound Processor) for IF sound detection, sound control and source selection. Amplification is done via a "class D" integrated power amplifier IC, the TDA7490.

The microprocessor, called OTC (OSD, TXT/CC and Control) takes care of the analog CC/OSD input processing and output processing. The OTC, ROM, and RAM are supplied with 3.3 V. The NVM (Non Volatile Memory) is used to store the settings; the Flash-RAM contains the set software.

9.3 Power Supply

9.3.1 Introduction

For Service, this supply panel is a black box. When defect (this can be traced via error-codes in the error buffer, or by strange phenomena), a new panel must be ordered, and after receipt, the defective panel must be send for repair.

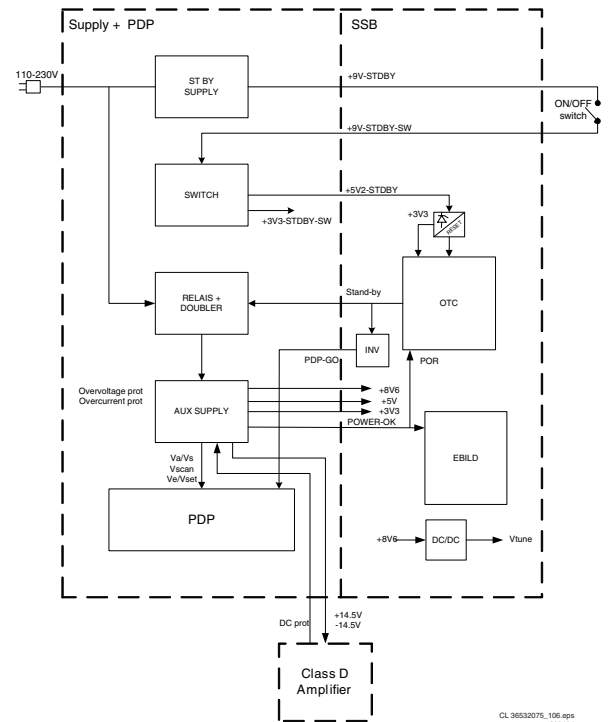


Figure 9-4 Power Supply block diagram

Standby Supply

The Standby supply is directly connected to the AC Power cord; there is no main switch. The AC Power input has a polarization that is requested for the USA together with a polarized AC Power cord; the neutral of the chassis is connected to the AC Power neutral. The 9V_STDBY is available before the functional ON/OFF switch.

Switch

When the ON/OFF switch is switched "on", the +9V_STDBY_SW is routed to the switch part in the supply; this delivers the 5V2_STDBY_SW to the OTC supply, which then generates its own reset.

The +3V3_STDBY_SW is not used.

Relay and Doubler

If the Standby bit in the OTC is not set, the Stand-by line becomes "low" and the relay in the supply connects the MAIN supply to the AUX supply. The 120 V_{ac} input is then doubled. The OTC delivers a PDP_GO signal to the PDP when the set is not in Standby.

Aux Supply

This is an LLC supply that delivers the V_a, V_s, V_{scan}, V_e, and V_{set} directly to the PDP. It delivers in the +8V6, +5V and +3V3 to the SSP. This means that the DC/DC converter in the SSP is not fitted. The V_{tuner} is derived via a DC/DC converter from the 8V6.

The AUX supply delivers a POWER_OK signal to the EBILD (but this signal is not used by the EBILD). It is used as POR signal to prevent audible plops, and by the OTC to guarantee a proper switch "off" (via the AC Power plug).

The V_SND_POS and V_SND_NEG are routed to the Class D amplifier. The DC protection from this amplifier goes directly to the supply and causes a hardware protection.

The AUX supply has his own over-voltage and over-current protection.

9.3.2 Power Balance

Table 9-1 Total power balance overview

Voltage name	Nom. value (V)	Max. value (A)
Vs	85	4.0
Va	75	1.2
Vsc	80	0.1
Vset	60	0.1
Ve	110	0.1
Vg	15	0.6
D5V	5.0	2.0
5V	5.0	0.84
3.3V	3.3	3.6
5V_STBY_SW	5.0	0.03
3V3_STBY_SW	3.3	0.2
8.6V	8.6	0.36
V_SND_POS	14.5	1.0
V_SND_NEG	-14.5	1.0
9V_STBY	9.0	0.005

9.3.3 Switch On/Off

Via the ON/OFF knob on the side, the set can be switched "on" or "off" (note: when "off" not all power is removed). Only after disconnecting the AC power cord from the power socket, all power is really gone.

9.3.4 Power States

There are four different power states. Some characteristics of these are summarized in the "Power states" table.

Table 9-2 Power states overview

Power state	On/Off switch	Remarks
OUT (mainscord disconnected)	x	No power
OFF	Off	- Only standby supply is working, - OTC not powered, - Main supply not working, - No LED is "on"
STAND BY (1)	On	- Standby supply is working, - Red LED is "on"
SEMI STAND BY	On	- Standby supply is working, - Main supply is working, - PDP is not active, - Time extraction , - Red and Green LEDs are "on"
ON	On	- The set is working, - Green LED is "on"

Events from OFF to SEMI-STANDBY or ON

(See also figure "Step wise start-up diagram" in chapter "Service Modes, Error Codes, and Fault Finding").

- The set is in "off" state until the ON/OFF switch is switched to "on". The standby voltage +5V-DISP becomes available, the OTC resets, the I/O pins are initialized, and the watchdog is enabled. The set comes in "standby" mode.
 - The sets leaves the "standby" mode if:
 - A time extraction must be started (after every start up).
 - The Standby bit is set to "off" (when a user switches "on" the set, this bit is also set to "off").
- The STANDBY line is set to "low", the +5V_SW is "on", the relay closes, and the AUX supply starts up. The 8V6 is now generated.

- The rest of the ICs are initialized. The EBILD is initialized min. 400 ms after the standby line is set to "low".
- If the Standby bit was set, the set goes into "semi-standby" until:
 - The time extraction is done.
- If the Standby bit was not set, the PDP is switched "on". The PWR-OK-PDP signal from the supply is received at the EBILD to inform the main processor of proper operating PDP supply.

Events in SEMI-STANDBY

- The set can be in "semi-standby" mode during Time extraction. This mode is ended when:
 - Time extraction has finished.
 - A user event "On" or "Standby".
 - The set goes into protection.
- If the Standby bit is not set (after a user event), the PDP is switched "on".

Events from ON to SEMI-STANDBY/STANDBY

- The set can be switched to "standby":
 - Via the RC (to "semi-standby").
 - Via the MENU button on the top control, long press (to "semi-standby").
 - Via a protection (to "standby").
- The running instructions are finished.
- The PDP is switched "off"; this is controlled by the OTC by means of the STANDBY line.
 - Sound is muted.
 - If there was a protection, the STANDBY line is put "high", and the set goes to standby.
 - If there was no protection, the set goes to "semi-standby".
- After an event in "semi-standby", the set goes to "standby".
- Protections are disabled.
- The OTC sets the STANDBY line "high", this switches "off" the Main power supply, and only the Standby supply remains working.
- The set is in "standby".

POR detection

After all the supply lines are available, the supply generates a POWER_OK signal (active "low"). This signal is used as POR to mute the sound as long as this line is not "low". The POR is inverted (called ROP) and is used to mute the sound as long as the POWER_OK is "low".

9.4 Input/Output (I/O)

9.4.1 Introduction

- There is no automatic detection for the presence of a source. All sources should be accessed via a "connect" command via Remote Control.
- The monitor out signal is always "front-end out", no matter what the source is.
- The HIP for further image processing does the detection between Y/C and CVBS automatically.

9.4.2 Input detection

The RGB or YPbPr input signals (2fH/3fH) are sent to the ADC (AD9883A) together with H and V pulses from the DVI input, and the Y signal from YPbPr called Sync-On-Green (green is same line as Y).

The AD converter:

- Detects via H and V sync, if RGB is present or not.
- Detects via Sync-On-Green, if YPbPr is present or not.
- Detects the selected sync.
- Selects the sync switch via I2C.
- Does AD conversion to 848 samples per line, 8 bits in 422 format. This means one bus for Y signal with 8 bits and one

bus for UV with 4 U and 4 V bits. Depending on the system detected by EBILD, the sample frequency is changed.

Note: When a 1fH input is detected, the AD converter is set in tristate.

1fH input flow

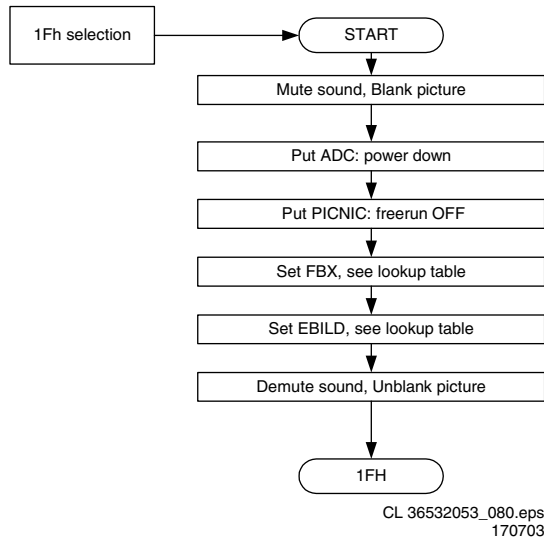
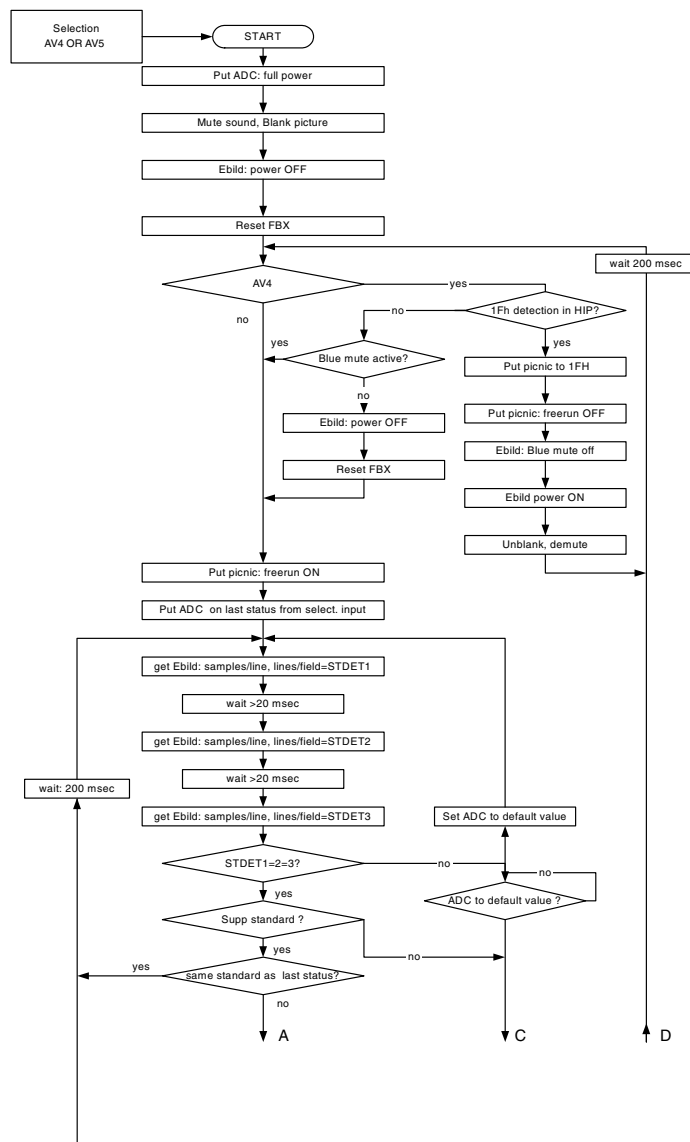


Figure 9-5 Flowchart 1fH detection



1. If a 1fH selection is done (except for AV4), the sound is muted and the picture is blanked.
2. The ADC is powered down.
3. The PICNIC is not in free run.
4. Both FBX and EBILD are set in 1fH (via Look Up Table).
5. Sound is demuted and picture is unblanked.

2fH/3fH input flow

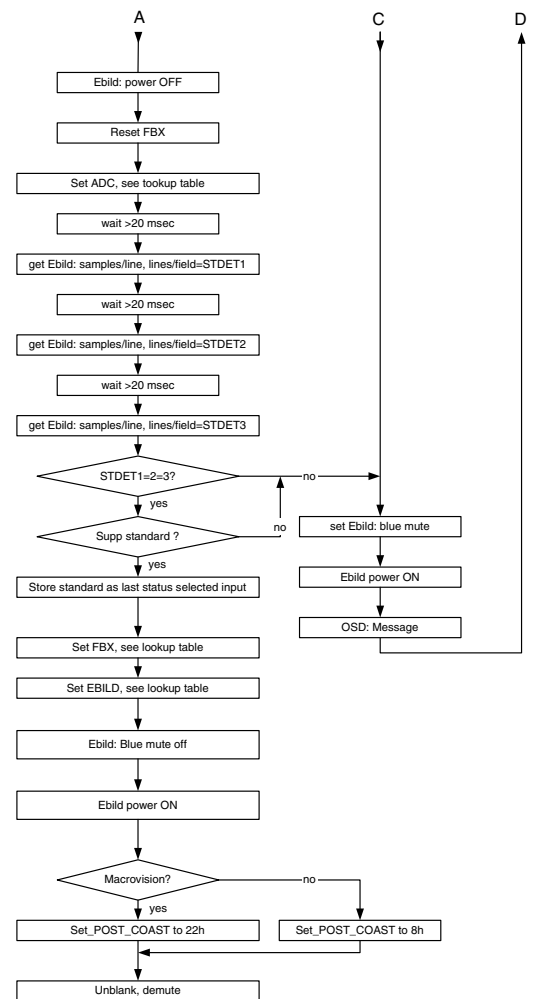


Figure 9-6 Flowchart 2fH/3fH detection

1. The standard detection starts with a 2fH/3fH selection on AV4 or AV5.
2. The ADC is full powered (it was powered down in 1fH).
3. The sound is muted and the picture is blanked.
4. When the input clock for the EBILD disappears and appears again, the EBILD clock can go wrong. Therefore, the EBILD must be in "Power Off" mode before standard detection, and in "Power On" mode after standard detection.
5. On AV4, a 1fH and 2fH/3fH signal can enter. This detection is done by the HIP. When 1fH is detected, the FBX is set to 1fH, the PICNIC is not in free run, the picture is unblanked, and the sound is demuted. The set is in 1fH state. This state is continues checked, because the input can change from 1fH to 2fH/3fH.
6. If the input is 2fH/3fH, the PICNIC is set to free run.
7. The ADC is set to the last status from this selected input, because there is a big chance that the same standard is wanted.
8. The number of samples per line and lines per field is collected from the EBILD. The check is done three times. If the same value is measured within some tolerances (via SW Look Up Table) the standard is valid. The time between two measurements must be at least one frame or 20 ms.
9. If the ADC has not the correct settings, the PLL does not lock, and the "STDET" measurements do not give the same results. The ADC is set to its default value; this value is able to catch all supported standards. If the ADC is already in the default value and no standard detection is possible, the set changes to picture mute.
10. If the standard is not supported, the set changes to picture mute via the EBILD, and a message is displayed.
11. If the standard is the same as the last status, the ADC is in the correct state, and both FBX and EBILD are set (via Look Up Table).
12. If the standard is changed, the ADC is set to the detected standard and a new check is done. If the standard is valid and supported, the new standard is stored in NVM as last status.
13. The FBX and EBILD are set (via SW Look Up Table).
14. Picture is unblanked and sound demuted.

9.5 Video Processing

9.5.1 Introduction

Notes:

- The FBX processing part is (almost) equal as described in the R8 manual (see section "Circuit Description, ..." paragraph "Video: Feature Box 7"). Therefore, it is not described here (except for some basics).
- As the used plasma is a "low res" VGA type, the "Pixel Plus" feature (generation of extra horizontal pixels and vertical lines) is not implemented in this chassis. However, the other picture improvement features of the Eagle IC (like CTI, peaking, and color enhancement) are used.

There are four AV inputs (AV4 can be 1fH or 2fH/3fH YPbPr), and one DVI 2fH/3fH input (see also figure "Chassis block diagram" in paragraph "Block Diagram").

The video processing is based on four key functions, being:

- The **HIP** + comb filter (for simple source select and video/chroma processing).
- The **EBILD** that takes over the video control functions of the HOP (as used in CRT based sets).
- The **FBX** configuration consisting of a PICNIC (100 Hz featuring), a FALCONIC (motion compensation and Auto TV featuring), and an EAGLE (used for scaling and picture improvements).
- A **2fH/3fH** source selection.

Additionally, the following features are added

- One-chip NEC **3D comb filter**: this comb filter uses spatial and temporal filtering for the elimination of cross color and cross luminance components. Not only for vertical lines, but also for stationary diagonal lines. This comb filter only supports the NTSC standard.
- The **light sensor** measurement required for "Active Control" is done by the OTC.

Basic functionality of HIP

I/O functionality

- The HIP selects the signals entering on 1fH base band. The HIP contains a source select matrix in order to handle a Tuner, three CVBS sources, two Y/C sources, and two RGB inputs (this in fact means one VIF input for tuner, four CVBS inputs with among them two Y/C inputs, and two RGB inputs). The HIP detects by itself whether the source is Y/C or CVBS, and decides how to handle the signal for further image processing.
- The HIP delivers the main video output (YUV- 1fH signal) for further image processing and three CVBS outputs, being: CVBS PIP/DS, CVBS_TXT_OUT for comb filter (always following YUV main!) and CC processing, and the CVBS/Y_RECORD_OUT for AV2.

IF functionality

- The HIP contains a multi standard IF circuit for video demodulation with AFC (Automatic Frequency Control) functionality, a sound IF amplifier, and an AM demodulator. An extra group delay correction is included.
- Chroma demodulation and video processing
- Sync acquisition, delivering H_A/V_A (Horizontal/Vertical Acquisition) towards FBX.

Basic functionality of EBILD

The EBILD is the interface between the FBX and the PDP screen. Its principal functions are:

- Video control functions of the HOP (Saturation, Contrast, Brightness).
- OSD insertion with blending.
- Video Matrix (NTSC, ATSC, PAL).
- For matrix displays additional functions like:

- Contrast reserve (peak limiter),
- Sync wheel,
- Dithering (matrix displays are 8 bit),
- Generation of correct timing for LCD display: lamp/ video.
- I2C and SNERT bus.
- Sync control.
- Odd/Even field detection.
- A/D converter alignment for OSD.
- H-sync generation for OTC.
- Control lines.
- “Color standard” detection.
- Handle shifts of the vertical deflection.
- Suppress H and V pulses in active video.
- Generate a H_REF for PICNIC (1fH) in case of a 2fH/3fH source.

Basic functionality of the OTC

The OTC combines the microprocessor and CC/OSD functionality.

9.5.2 HD Video Source Selection

Table 9-3 Video input overview

I/O	Screen	CVBS-in	CVBS-out	Y/C-in	Y/C-out	RGB 1fH+ FBL	YPbPr 1fH	YPbPr 2fH/3fH	DVI
AV1	Main	Yes	No	No	No	No	No	No	No
AV2	Main	Yes	Yes, WYSIWYR	Yes	No	No	No	No	No
AV3	Main	Yes	No	Yes	No	No	No	No	No
AV4	Main	No	No	No	No	No	Yes	Yes	No
AV5	Main	No	No	No	No	No	No	Yes	Yes

9.5.3 Video Processing

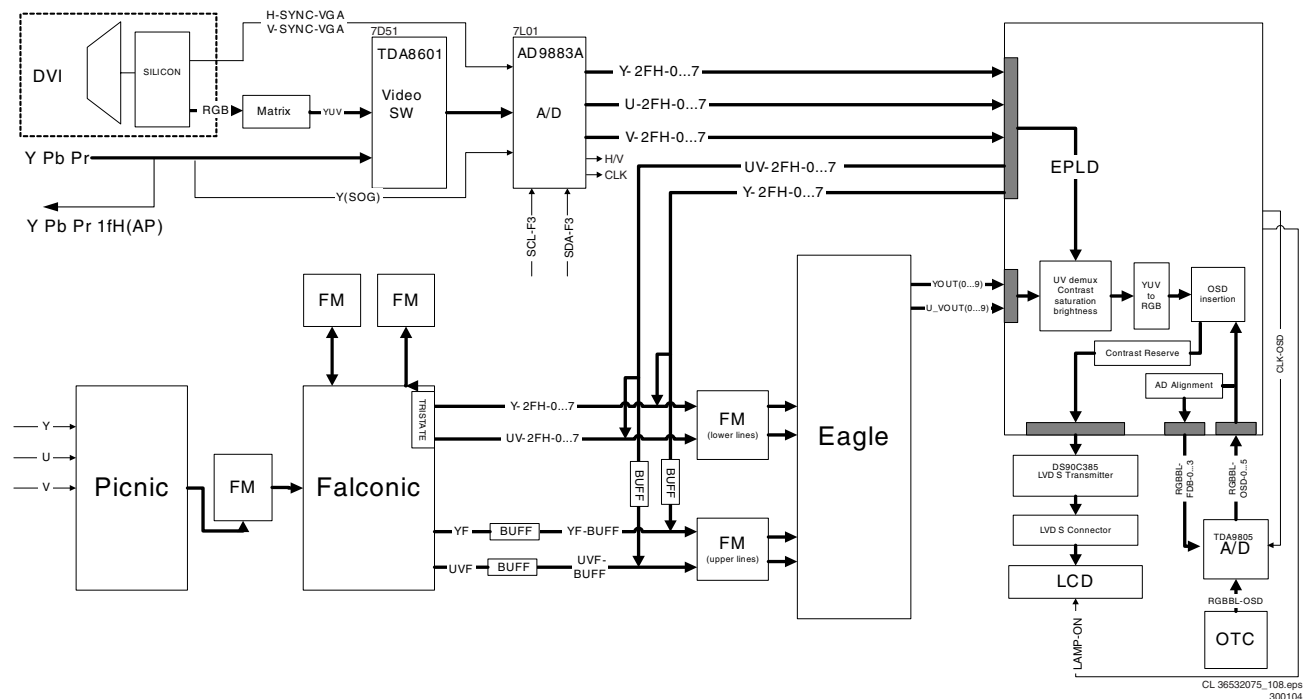


Figure 9-7 Video processing 2fH/3fH input

The High Definition Input (HDI) part has two input "ports". Each port consists of a video and an audio input. The ports are named "DVI" (= AV5) and "AV4" and will be referred to using these names.

The physical connectors for these inputs are:

- **AV4.** Three cinches that can be used for YPbPr with Sync-On-Green and two cinches for analogue Audio (left and right).
- **AV5.** One DVI connector and two cinches for analogue audio (left and right).

Table 9-4 AV4 (YPbPr) input signals

AV4 Inputs (YPbPr)	System	Field freq. (V)	Line freq. (H)
576 i	PAL	50 Hz	15.6 kHz
480 i	NTSC	60 Hz	15.6 kHz
576 p	PAL	50 Hz	31.25 kHz
480 p	NTSC	60 Hz	31.5 kHz
1080 i	ATSC	60 Hz	33.7 kHz
1080 i	ATSC	50 Hz	28.125 kHz
720 p	ATSC	50 Hz	37.5 kHz
720 p	ATSC	60 Hz	45 kHz

Table 9-5 AV5 (DVI) input signals

AV5 Inputs (DVI)	System	Field freq. (V)	Line freq. (H)
VGA	640x480	60 Hz	31.5 kHz
SVGA	800x600	56 Hz	35.1 kHz
576 p	PAL	50 Hz	31.25 kHz
480 p	NTSC	60 Hz	31.5 kHz
1080 i	ATSC	60 Hz	33.7 kHz
1080 i	ATSC	50 Hz	28.125 kHz

The outputs of the ADC (item 7L01) towards the electronics of the set consist of:

- Video: Y-, U-, and V-2FH-AD-OUT video signals (YUV-422).
- Sync: H-2FH-AD-OUT and V-2FH-AD-OUT (see also figure "Sync and clock flow" further on).
- Clock: CLK-2FH (see also figure "Sync and clock flow" further on).

Notes:

- In case of **2fH** inputs, the signal is (after detection via the EBILD) routed through the FBX for picture improvement. The YUV output of the Eagle is then routed to the EBILD for the displaying part.
- In case of **3fH** inputs, the signal is not routed via the FBX (because the Eagle cannot handle them), but directly processed by the EBILD.

9.5.4 Miscellaneous

Comb Filter

The video signal prepared for broadcast, contains two major parts commingled: the luminance (makes a black and white picture in full detail) and chrominance (coloration with not quite all the detail). This method is used instead of red, green, and blue sub-signals in order to get the best looking picture that can be transmitted in the limited bandwidth of the broadcast channel.

Every TV receiver and VCR/DVDR must contain a filter to separate the luminance and color (Y and C) again. Less than perfect Y/C separators lose resolution - horizontal, vertical, or both. Also there are artifacts such as *rainbow swirls* where thin stripes should be, and *crawling dots* where patches of different colors meet. The perfect Y/C separator does not exist yet, although 3D comb filters come close.

Conventional (2D) Comb filters separate the luminance (black and white picture information) from the chroma (color picture information), by comparing horizontal scanning lines within one video frame. The 3D Digital Comb filter takes this idea two steps further by acting upon not only consecutive lines within the frame, but in the frame before and after as well. The added (time) analysis and correction, result in far sharper pictures with less noise as well as an enhanced purity of color. The filter also compensates for any motion that occurs between fields.

The 3D Comb filter is integrated in one IC (type uPD64083). The block diagram of the 3D Comb panel is indicated in the next figure (re-use of R8 manual, does not reflect the actual circuit **exactly**).

comb filter. Both the conventional 2D comb filter (EUR) and the 3D Comb filter (USA) have to use this HIP command.

Notes:

- The command ENABLE_COMBFILTER enables the function. If the TV standard that enters the TV is one where a comb filter can be applicable (e.g. NTSC 3.58), the HIP will determine self if the video signal can be combed and as a consequence, the video processing output can be CVBS or Y/C. No software interaction is needed.
Remark: Enabling the comb filter does not necessarily mean that the signals will be combed.
- The comb filter must be disabled in case of RGB and for YPbPr-1fH, to avoid big horizontal shifts of the picture caused by the comb filter processing.

Auto TV

The Auto Picture Control or in short AutoTV, aims at providing the customer the best possible picture performance at any time. Therefore, it performs real time processing of the video signal and because of that, it decides to adapt several video parameters throughout the whole chassis. The total effect of Auto Picture Control on the screen can be selected by the use of the remote control. The commercial name for the feature is "Active Control".

The basic component for AutoTV is the FBX. It measures the picture content and it has the most video control parameters on board, like peaking, coring, DNR, and so on. With the presence of the Eagle, additionally the color enhancement functions are controlled. Also, the light sensor is supported via the OTC. Finally, vertical peaking is mostly done in Eagle, a little in the PICNIC, and the motion compensation and DNR is done in the FALCONIC.

See also R8 service manual.

9.6 Audio

9.6.1 Audio decoding

For the USA region the ITT MSP3421 audio decoders is used.

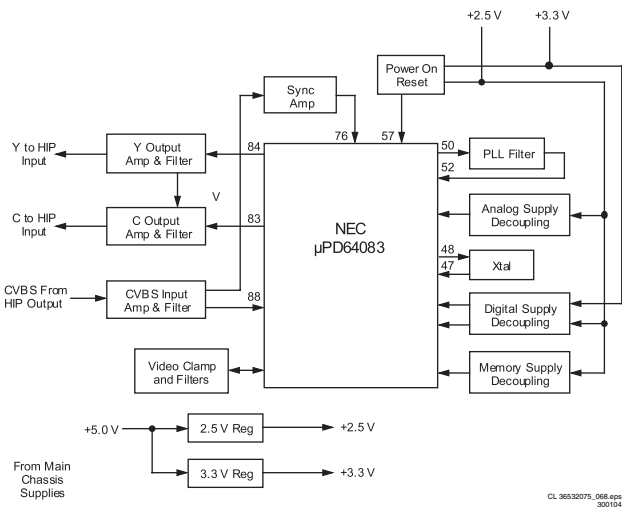


Figure 9-8 Block diagram 3D comb filter

The comb filter functionality can be enabled or disabled via the HIP. This means allowing or disallowing the HIP to use the

9.6.2 Audio source selecting

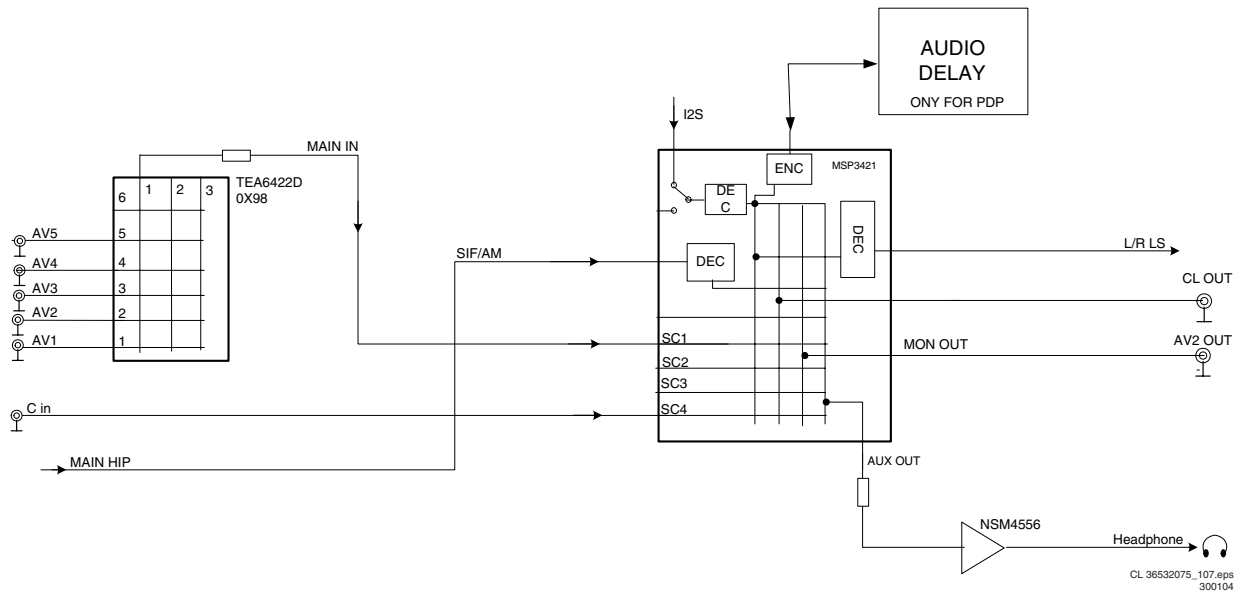


Figure 9-9 Audio block diagram

The MSP covers a SIF input, four stereo inputs and one mono input. As this chassis needs more inputs, one matrix IC (TEA6422D, item 7117) is added. The stereo inputs on this IC are:

- AV1.
- AV2.
- AV3.
- AV4 (YPbPr/1fH or 2fH/3fH).
- AV5 (DVI).

There are three separated outputs on the matrix IC, but only the main output (MAIN_IN, going to the MSP), is used. The MSP has the following inputs:

- SIF input.
- MAIN_IN from matrix IC TEA6422D.
- Centre input.

9.6.3 Audio processing

The MSP3421 audio processor IC can handle Virtual Dolby. All sets have 2 x 10 W_{rms} output. The following **outputs** are present:

- Line out to audio amplifier.
- Monitor out: Front-end.
- Headphone out.

9.6.4 Audio Amplifier Panel (Diagram A)

Introduction

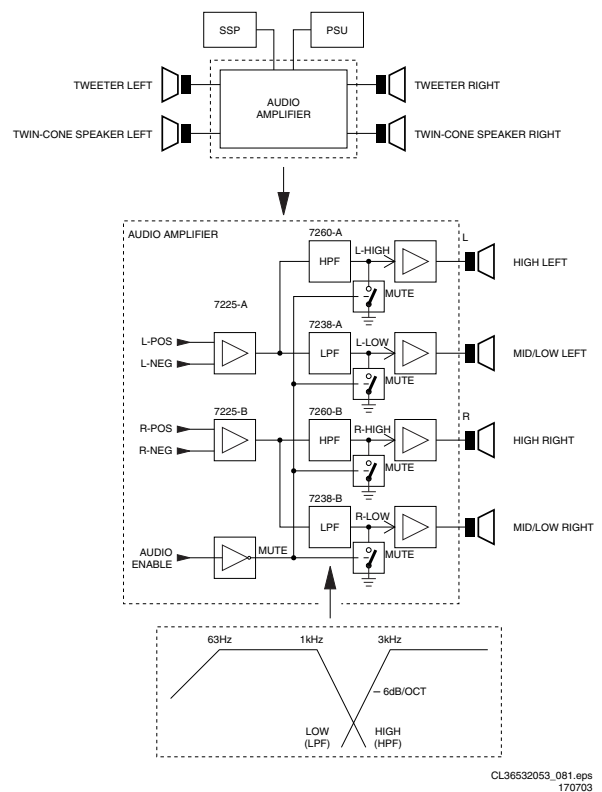


Figure 9-10 Block diagram Audio Amplifier

This panel houses the audio filters and amplifiers necessary for driving the speakers. The differential audio inputs (for common mode immunity) come from the SSP (via connector 0388). The PSU delivers the positive and negative supply voltage of 12 V_{dc}, as well as the +5V2 (standby) voltage. After being filtered and amplified, the signals go to the speaker section, where the (twin cone) low/mid range speakers and the tweeters are driven (load impedance is 8 ohm).

The headphone amplifier is a straightforward OpAmp amplifier (IC7A07-A, MC33178D). It is supplied with +11V_{AUD}.

Supply (Diagram A7)

The supply voltage is a symmetrical voltage of $\pm 14.5\text{ V}_{\text{dc}}$, generated by the AUX supply.

- $V_{\text{SND_POS}}$ ($+14.5\text{ V}_{\text{dc}}$) on connector 0302 pin 5/6 (fused via item 1730 on the amplifier panel).
- $V_{\text{SND_NEG}}$ ($-14.5\text{ V}_{\text{dc}}$) on connector 0302 pin 1/2 (fused via item 1740 on the amplifier panel).

Filter (Diagram A2)

Electrical filtering is needed for following reasons:

- Limiting the cone excursion, thereby reducing the distortion.
 - Increasing the power handling capacity (PHC).
- Active second order Sallen-Key filters are used, with crossover frequencies of 1 kHz for the low pass filter, and 3 kHz for the high pass filter.

The audio signals are filtered **before** the amplifier. There are some reasons for doing this:

- It is now easy to do active filtering.
- Less costs (no expensive coils and capacitors).

Low Pass Filter (LPF)

For L and R separately, a Low Pass Filter (IC7238A and B) is processing L_{LOW} and R_{LOW} .

The output signal of this filter is then fed to the audio amplifier (identical for right channel).

High Pass Filter (HPF)

For L and R separately, a High Pass Filter (IC7260A and B) is processing L_{HIGH} and R_{HIGH} .

The output signal of this filter is then fed to the audio amplifier (identical for right channel).

Amplifier (Diagrams A3 to A6)

Each speaker has its own class-D amplifier. These amplifiers combine a good performance with a high efficiency, resulting in a big reduction in heat generation.

Principle

Audio-power-amplifier systems have traditionally used linear amplifiers, which are well known for being inefficient. In fact, a linear Class AB amplifier is designed to act as a variable resistor network between the power supply and the load. The transistors operate in their linear region, and the voltage that is dropped across the transistors (in their role as variable resistors) is lost as heat, particularly in the output transistors. Class D amplifiers were developed as a way to increase the efficiency of audio-power-amplifier systems.

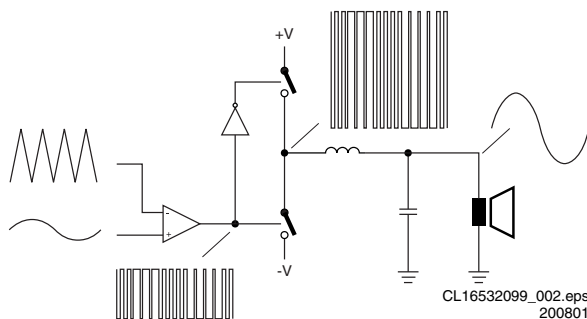


Figure 9-11 Principle Class-D Amplifier

The Class D amplifier works by varying the duty cycle of a Pulse Width Modulated (PWM) signal.

By comparing the input voltage to a triangle wave, the amplifier increases duty cycle to increase output voltage, and decreases duty cycle to decrease output voltage.

The output transistors (item 7365 on diagram A3) of a Class D amplifier switch from 'full off' to 'full on' (saturated) and then back again, spending very little time in the linear region in between. Therefore, very little power is lost to heat. If the

transistors have a low 'on' resistance ($R_{\text{DS(ON)}}$), little voltage is dropped across them, further reducing losses.

A Low Pass Filter at the output passes only the average of the output wave, which is an amplified version of the input signal. In order to keep the distortion low, negative feedback is applied (via R3308). A second feedback loop (via R3310) is tapped after the output filter, in order to decrease the distortion at high frequencies.

The **advantage** of Class D is increased efficiency (= less heat dissipation). Class D amplifiers can drive the same output power as a Class AB amplifier using less supply current.

The **disadvantage** is the large output filter that drives up cost and size. The main reason for this filter is that the switching waveform results in maximum current flow. This causes more loss in the load, which causes lower efficiency. An LC filter with a cut-off frequency less than the Class D switching frequency (350 kHz), allows the switching current to flow through the filter instead of the load. The filter is less lossy than the speaker, which causes less power dissipated at high output power and increases efficiency in most cases.

Mute (Diagram A3 for "Left High")

A mute switch (item 7302) is provided at the PWM inputs (item 7315, LM311). This switch is controlled by the $AU_{\text{EN_NOT}}$ line, which is controlled via the POR signal (mute at start-up) and via the $SOUND_ENABLE$ line from the OTC (mute during operation). This circuitry is the same for all four amplifier parts.

Protections**Short-circuit Protection (e.g. Diagram A3 for "Left High")**

A protection is made against a too high temperature of transistor 7355 in case of a short-circuit of output FET 7365-1. Transistor 7340 is sensing the current through transistor 7355 via R3355, and activates the DC-protection line (see below) in case the current becomes too high. This is the same for all four amplifier parts.

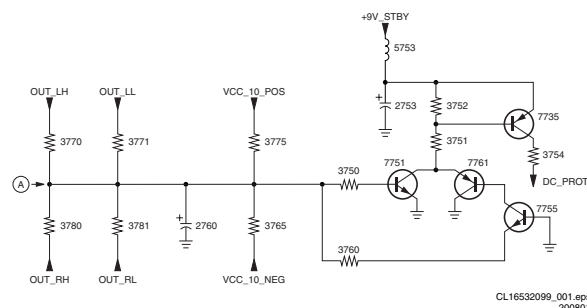
DC-protection (Diagram A7)

Figure 9-12 DC Protection

Because of the symmetrical supply, a DC-blocking capacitor, between the amplifier and the speaker, is not necessary. However, it is still necessary to protect the speaker for DC voltages.

The following protections are therefore implemented:

- Via R3765 and R3775, each stabilized supply voltage line (via items 7735 and 7745) is checked on deviations.
- Via R3770/3771/3780/3781, each amplifier output is checked for DC-voltage.

Via R3765/3775, a virtual earth is imposed on point A. When one of the supply voltages deviates, a DC voltage will occur on this point. If point A is positive, T7751 will conduct. If it is negative, T7761 will conduct.

Both cases will make T7735 conduct, so that the DC-PROT signal will be made high. This ensures that the power supply is rapidly trimmed back.

Capacitor C2760 will ensure that only DC-signals at point A will activate the protection.

9.7 Synchronization

9.7.1 Introduction

Through the chassis, the synchronization is complicated because the PDP display needs another number of pixels per line (852) and lines per frame (480). Therefore, there is a different sync flow for 1fH, 2fH, or 3fH inputs.

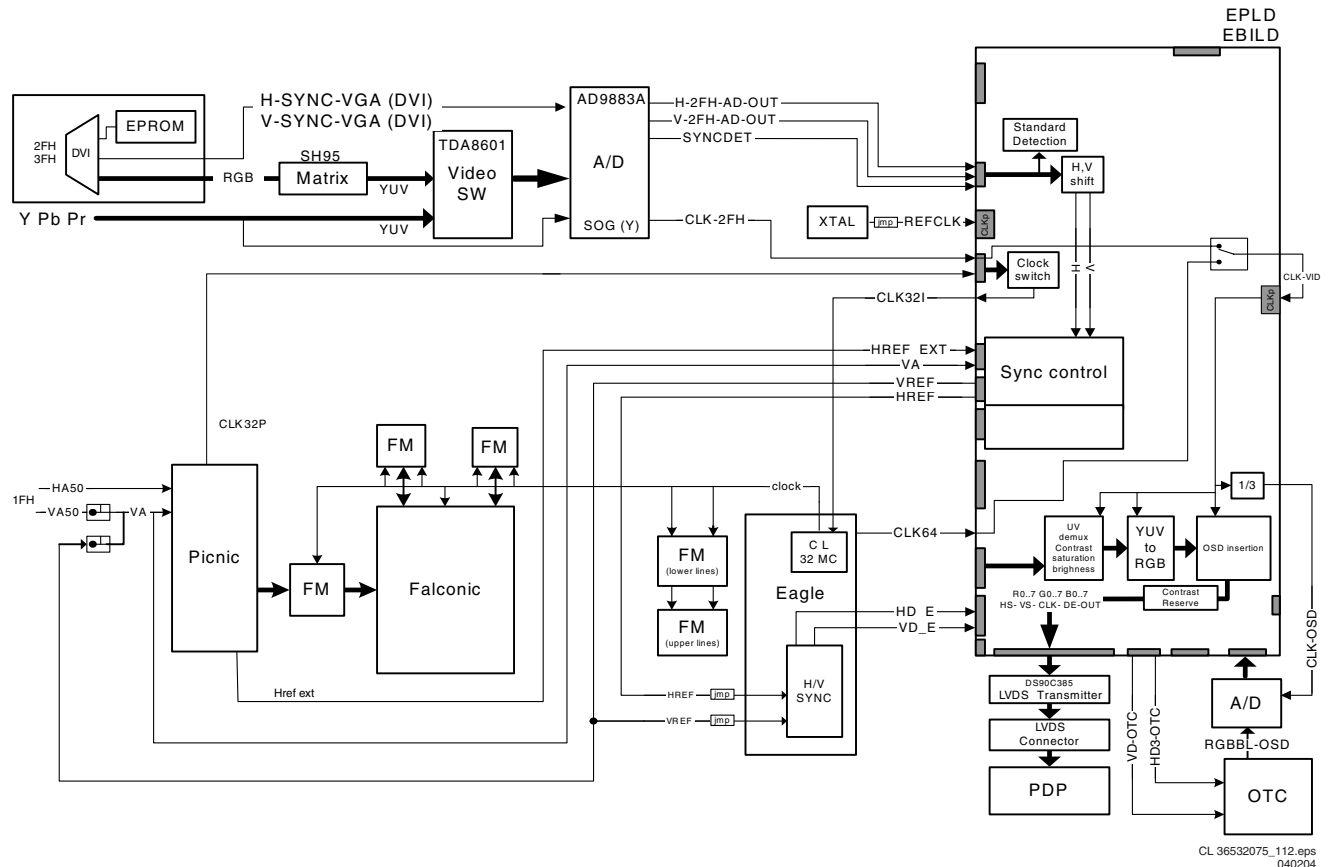


Figure 9-13 Sync and clock flow

9.7.2 Sync Flow 1fH Inputs

1fH Sync Signals

- At the 1fH side, the HIP is detecting the incoming video signal and provides a H_A50/V_A50 (Horizontal / Vertical Acquisition sync) pulse. This is the sync input for the FBX.
- The flywheel of the PICNIC gives a 1fH sync H_REF_EXT to the EBILD, together with the V_A pulse.
- These are switched in the EBILD and sent to Eagle (H_REF and V_REF).
- The Eagle delivers new sync pulses HD_E and VD_E converted to the new line and frame sequence of the PDP 3fH. The PDP displays in 50 or 60 Hz, 480 lines per field and 852 samples per line.
- The EBILD delivers sync pulses to the OTC for OSD and CC/TXT (VD_OTC and HD3_OTC). Note that the OSD has a field freq of 50/60Hz.

1fH Clock Signals

- The PICNIC delivers a 32 MHz (CLK32P) to the EBILD synchronized with H pulses.
- The EBILD switches this signals to the Eagle (CLK32I).
- The Eagle delivers a clock signal for the FALCONIC and the field memories.
- The Eagle delivers a 64 MHz clock to the EBILD (CLK64).

9.7.3 Sync Flow 2fH Inputs

2fH Sync Signals

- These input signals do not come via the HIP and PICNIC, but via the AD9883A. This AD converter delivers H and V sync signals to the EBILD (H-2FH-AD-OUT and V-2FH-AD-OUT).
- These inputs are used for standard detection and H and V shift.
- The EBILD divides the pulses by two, and switches the H and V syncs to the Eagle (H_REF and V_REF).
- The Eagle delivers new sync pulses HD_E and VD_E converted to the new line and frame sequence of the PDP 3fH. The PDP displays in 50 or 60 Hz, 480 lines per field and 852 samples per line.
- The EBILD delivers sync pulses to the OTC for OSD and CC/TXT (VD_OTC and HD3_OTC). Note that the OSD has a field freq of 50/60Hz.
- The PICNIC receives V_ref pulses as reference; it is free running for horizontal sync.

2fH Clock Signals

- The AD9883A gives his sample clock (CLK-2FH) to the EBILD, this clock is synchronized with the incoming H pulses.
- The EBILD switches this pulse to the Eagle (CLK32I).
- The Eagle delivers a clock signal for the FALCONIC and the field memories.
- The Eagle delivers a 64MHz clock to the EBILD (CLK64).

9.7.4 Sync Flow 3fH input sync signals

3fH Sync Signals

- These input signals do not come via the HIP and PICNIC but via the AD9883A. This AD converter delivers H and V sync signals to the EBILD (H-2FH-AD-OUT and V-2FH-AD-OUT).
- The sync signals are the same as with 2fH inputs.

3fH Clock Signals

- The master clock is delivered by the AD9883, same as with 2fH inputs. The EBILD uses this clock as sample clock for video control.

9.8 Control

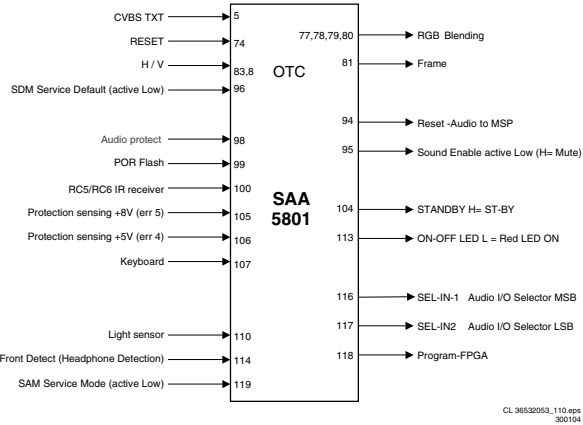


Figure 9-14 OTC interfacing

9.8.1 I2C Bus

In this chassis, there are three different I2C busses defined (see also diagram "I2C ICs overview" in section "Wiring Diagram, Block Diagrams, and Overviews"):

- Slow hardware I2C bus (or I2C1), being used for IC communication.
- Fast hardware I2C bus (or I2C2), being used for IC communication.
- I2C bus (software) for NVM (or I2C3): this special bus is installed to avoid data corruption in the Non Volatile Memory. No other devices should be connected to this bus in order to avoid the conditions where data transports are not reliable due to state transitions in the set.

The two hardware I2C busses are completely separated and have a different speed. I2C1 is a slow bus (max. 100 kHz), while I2C2 is a fast bus (max. 400 kHz). Both busses have pull-up resistors connected to the +5V voltage, which is available in all set modes (Standby voltage).

To prevent that the customer is confronted with a flashing LED indication although the set is still OK (e.g. by spurious triggering of the detection algorithms due to bad IC behavior or external disturbances like ESD), the logging algorithm of the two errors is adapted:

- I2C bus blocked error: if the driver triggers five times within one second, the "bus blocked error" is logged and the blinking LED procedure is started.
- NVM error: if the driver generates a NVM error for five consecutive times, the error is logged and the blinking LED procedure is started.

9.8.2 "Switch On" Behavior

See paragraph "Power States" in this chapter.

9.8.3 OTC Flash

See paragraph "Software Upgrading" in this chapter.

9.8.4 Keyboard

The local keyboard is connected to P2-4 (pin 107) of the OTC, which is an A/D pin. Each key matches with a range of values within the A/D converter.

9.8.5 LED Control

In USA the same LED configuration is used as in Europe, the two-color LED.

Table 9-6 LED control

Condition	Two color LED
On	Green
Off	No indication
Low power standby	No indication
Standby	Red
Semi-standby	Orange (red and green)
Reaction on RC in On-state	Orange (green and red blinking)
Reaction on RC in Standby	Red
Reaction on RC in Semi-standby	Orange (green and red blinking)
Protection	Red blinking

9.9 Protections

9.9.1 General

Under certain fault conditions, as described below, the set must go into the "protection state". This means that the set is switched into standby and displays a blinking LED. These protections are introduced in order to avoid unacceptable temperature rises and burning hazards. The failure cause will be identified and put into the NVM error buffer.

For the customer, it is made impossible to switch the set "on" with his remote control. On the other hand, it must be possible to read out the error codes from NVM while using a Dealer Service Tool or a ComPair tool, or to de-activate the protection states in Service Default Mode. It is possible to enter ComPair from protection but not from Standby.

The protection algorithms are activated/de-activated at a certain stage in the "start-up/switch-off" sequence of the set (see also figure "Step wise start-up diagram" in section "Service Modes, Error Codes, and Fault Finding").

9.9.2 Hardware protections

See also section "Service Modes, Error Codes, and Fault Finding" of this manual.

Protections with detection via I/O lines of the OTC

8V protection

The +8V information is an ADC input of the microprocessor. This input can sense the absence of the +8V. The failure is filtered by software and put in the error buffer for serviceability. The set goes into protection.

5V protection

The Standby supply delivers the 5V for the OTC, the 5V for SSP is delivered by the AUX supply

By removing the AC Power cord, the Main supply switches "off" while the Standby supply stays "on" during 8 s. The OTC is still working, but the input voltages of 5V and 8 V disappear; the set generates errors and goes to protection.

To avoid this:

- Switch the error logging and protection "off" when the POK (this is the POR on the OTC) becomes "low".
- When the POR becomes "high" restart the set.
- When the POR is still "low" after 10 s, go to protection.

If a +8V or a +5V dropout is detected, the protection input should be checked several times, every 200ms. If the protection input is active for five consecutive times, the set must go into protection.

DC protection (from audio amplifier)

Because of the symmetrical supply of the audio amplifier, a DC-blocking capacitor between the amplifier and the speaker is not necessary. However, it is still necessary to protect the speaker for DC voltages. If a DC protection is activated, the OTC will set the TV in protection. A specific error code is **not** generated. For a detailed description, see paragraph "Audio Amplifier".

Protections with detection via I2C bus

PDP

The 3V3 is delivered by the PDP supply, therefore the DC/DC converter is not fitted. The FBX, EBILD and 3D comb have no supply voltage and as a result cannot give an acknowledge. The "3V3_PDP_ERROR" (error "55") is written in the NVM, and the set goes to protection.

Tuner protection

The tuner is supplied by the +5V_SW, which is delivered by the Standby supply. When this supply is short-circuited, the Standby supply will hiccup. If the tuner does not acknowledge on its I2C address for five consecutive times, the set goes into protection and error "13" is generated. Maximum time allowed before protection: 1.5 s.

9.10 PDP Panel

9.10.1 Introduction

The PDP, which is used in this chassis, is a product of SDI (Samsung Display Industry). When defect, a new panel must be ordered, and after receipt, the defective panel must be sent for repair in the packing (flight case) of the new ordered panel.

9.10.2 Operation

Plasma displays work by applying a voltage between two transparent display electrodes on the front glass plate of the display. The electrodes are separated by an MgO dielectric layer and surrounded by a mixture of neon and xenon gases. When the voltage reaches the 'firing level', a plasma discharge occurs on the surface of the dielectric, resulting in the emission of ultra violet light.

This UV light then excites the phosphor material at the back of the cell and emits visible light. Each cell or sub-pixel has red, blue or green phosphor material and three sub-pixels combine to make up a pixel. The intensity of each color is controlled by varying the number and width of voltage pulses applied to the sub-pixel during a picture frame. This is implemented by dividing each picture frame into sub-frames. (For 50 Hz-mode there are 12 sub frames, for the 60 Hz-mode there are 10 sub frames). During a sub-frame, all cells are first addressed - those to be lit are pre-charged to a specific address voltage -

then during the display time the display voltage is applied to the entire screen lighting those that were addressed.

Each sub-frame has a weighting-factor (time-entity depends on size and number of pixels on the screen). This is a purely digital PWM control mechanism, which is a key advantage as it eliminates any unnecessary digital to analogue conversions.

9.10.3 LVDS Interface

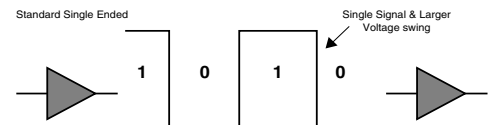
What are the main differences between TTL and LVDS (used here) interfaces?

- Standard single ended signal (TTL).
 - This requires 28 signal lines and more than 14 grounds.
 - Single ended signals up to 3 V.
 - Wide flat ribbon cable.
 - EMI/EMC problems.
 - Feasible up to VGA/NTSC resolution (limited to 250 Mb/s).
- LVDS
 - Five low voltage (350 mV) differential pairs: one clock pair and four data pairs.
 - Five grounds.
 - EMI/EMC friendly.
 - WXGA and HD-1280x720p (up to 1 Gb/s).

Conclusion: LVDS offers superior performance compared to the standard single ended signal (TTL). It is even "protocol independent" so it requires no software.

- Lower Voltage Swing (only 350 mV vs. 3 V)

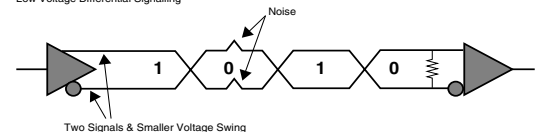
- Allows faster Clocking
 - Standard open Ended: 250Mbps
 - LVDS: >1 Gbps



- Differential Signals (Two Signals) ...Low Noise!

- Receiver reads a 1 or 0 based on the delta of the two signals.
- Noise Impacts both lines and cancels out each others.

Low Voltage Differential Signalling



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310703

Figure 9-15 LVDS technology

9.11 Software Upgrading

9.11.1 Introduction

In this chassis, you can **upgrade** the **main** software via ComPair. This offers the possibility, to replace the entire SW image without having to remove the flash-memory from its socket. You can find more information on the procedure in the ComPair file.

To speed up the programming process time, the firmware of the ComPair interface can be upgraded. See Chapter "Service Modes ...", paragraph "ComPair" - "How To Order" for the order number (note: all registered ComPair users receive the upgrade IC free of charge).

9.11.2 Specifications

- Some specifications are:
- The upgrade feature makes use of I2C to transfer a new SW image (4 MB).
 - It requires the ComPair interface Box (RS232 to I2C).
 - The I2C bus is available at the rear side of the set.
 - It uses a ZIP-compressed BIN image to speed up the transfer process (1/2 size).
 - The complete procedure takes less than 20 minutes with an upgraded ComPair interface:
 - About 90 seconds to erase a 4 MB flash-memory.
 - Less than 10 minutes to transfer the file (max 1.9 MB).
 - About 5 minutes to decompress/program the flash-memory.

Note: It takes about 85 minutes with a standard interface.

- Constraints:
- This process needs the EPG flash memory, so this device must be placed also for non-EPG regions like AP and USA.

- Advantages:
- Flexibility.
 - No change in internal ROM (IROM) required (IROM not used).
 - Flexibility to change of code flash manufacturer as the "flash driver" is part of the bootstrap code (part of the main software image).

9.11.3 Concept

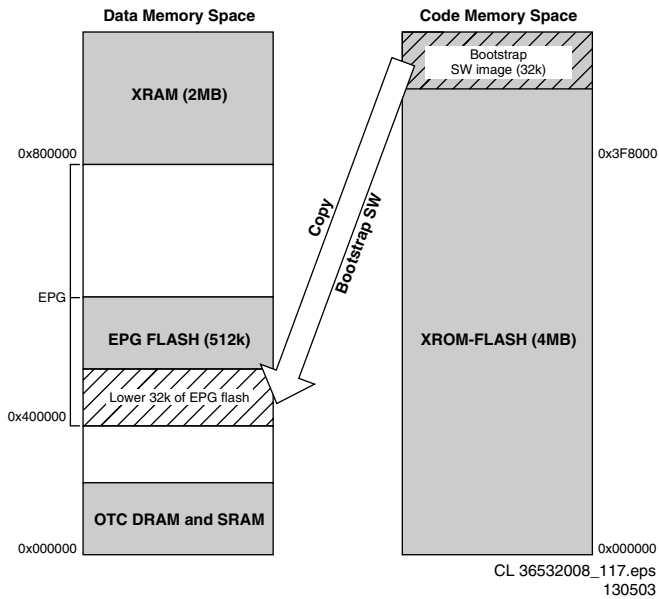


Figure 9-16 Memory diagram (initial situation)

The architecture of the OTC microprocessor does not allow the execution of code from the external RAM. It is also impossible to write data in the code memory space (there is no instruction to write data to those memory locations). The OTC normally boots from its internal ROM (IROM) but modification of the **internal** ROM software would be too expensive. Fortunately, the chip architecture allows also the booting from **external** ROM (XROM). The IROM is mapped on the first 32 kB of the ROM address space. The XROM is mapped starting at the same address. Therefore, the lower 32 kB of XROM overlaps the IROM memory space. Via an external pin (EA), it is possible to reveal the XROM memory below the IROM and so boot using this hidden software. This is the first trick used by the software upgrade procedure.

To be able to write to the CODE flash, it is required to address the device via the RAM address space. Today all RAM but also the EPG flash is mapped on the RAM address space. Devices are mapped to the right address space via a few control lines (kind of chip select). By exchanging the control lines between the EPG and the CODE flash, it is possible to map the CODE flash in the RAM address space and at the same time use the EPG flash to execute software. This is the second trick used by the procedure.

The main idea is to use the EPG flash to boot up the software upgrade procedure. Therefore, the complete procedure relies on the presence of that one.

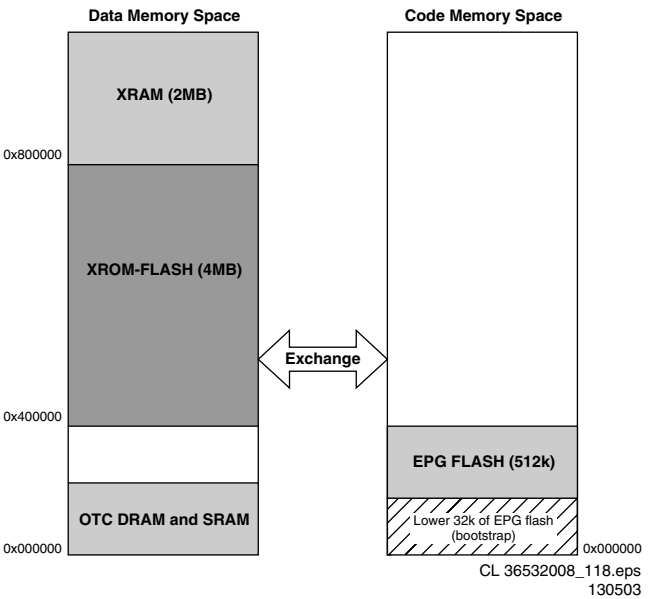


Figure 9-17 Memory diagram (after bus exchange)

In order to be able to write new software code to the set, we therefore must copy the bootstrap code to a free memory area (e.g. the EPG flash-memory) in order to be able to execute "externally" the upgrade procedure code. Solution: swap the software code to the data memory space (via setting jumper/switch 1402) and boot from the EPG FLASH. After the zip-file uploading and (internally) software unpacking, the old situation must be restored.

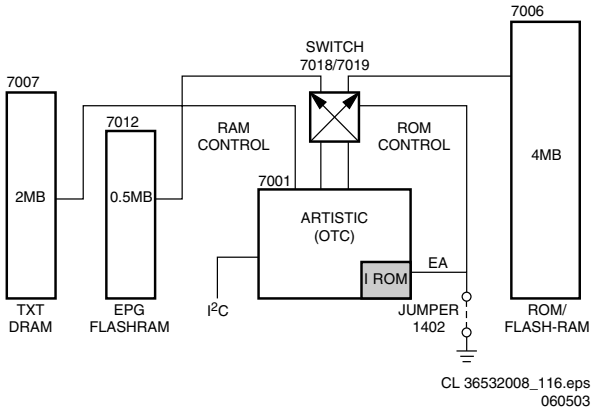


Figure 9-18 Software upgrade set-up

A jumper/switch on the SSP will swap the devices and boot "externally" via the EPG flash. Then, via ComPair, the download command is given. The new (ZIP) image will be first downloaded to the OTCs external RAM (CC/TXT DRAM). Then

a checksum on the ZIP image will be computed on both sides (PC and TV) and compared.
 If everything is correct, the CODE flash will be erased and the new image will be transferred and unzipped (= decompressed) into the flash. This is done via the bootstrap code. A second checksum will be computed on the decompressed image.
 After the upgrade, the EPG flash will be cleared again.

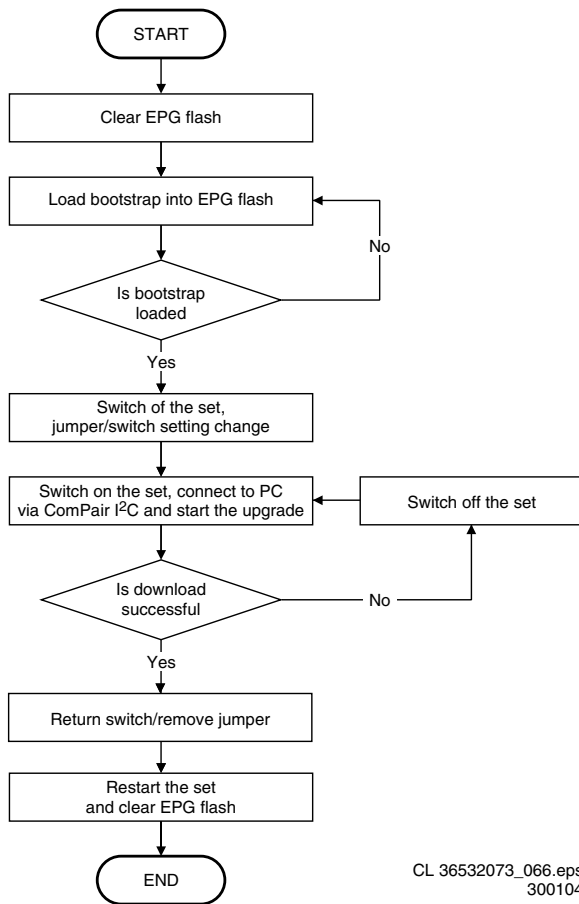


Figure 9-19 Software upgrade flow chart

9.12 Abbreviation list

2DNR	Spatial (2D) Noise Reduction	Eagle	Feature box IC performing peaking, zooming and subpixel LTI in both horizontal and vertical directions, CTI, and other color features
3DNR	Temporal (3D) Noise Reduction		
AARA	Automatic Aspect Ratio Adaptation: algorithm that adapts aspect ratio to remove horizontal black bars; keeps the original aspect ratio	EBILD	Eagle Based Intelligent LCD Driver (Programmed EPLD)
ACI	Automatic Channel Installation: algorithm that installs TV channels directly from a cable network by means of a predefined CC/TXT page	E-DDC	Enhanced Display Data Channel (VESA standard for communication channel and display). Using E-DDC, the video source can read the EDID information from the display.
ADC	Analogue to Digital Converter	EDID	Extended Display Identification Data (VESA standard)
AFC	Automatic Frequency Control: control signal used to tune to the correct frequency	EEPROM	Electrically Erasable and Programmable Read Only Memory
AGC	Automatic Gain Control: algorithm that controls the video input of the feature box	EMI	Electro Magnetic Interference
AM	Amplitude Modulation	EPG	Electronic Programming Guide (used in Europe)
ANR	Automatic Noise Reduction: one of the algorithms of Auto TV	EPLD	Erasable Programmable Logic Device
AP	Asia Pacific	EU	Europe
AR	Aspect Ratio: 4 by 3 or 16 by 9	EXT	External (source), entering the set by SCART or by cinches (jacks)
Artistic	See OTC 2.5: main processor	FALCONIC	SAA4992H, feature box IC which performs Digital Natural Motion, 3DNR vertical zoom, and vertical peaking
ASF	Auto Screen Fit: algorithm that adapts aspect ratio to remove horizontal black bars without discarding video information	FBL	Fast Blanking: DC signal accompanying RGB signals
ATSC	Advanced Television Systems Committee	FBX	Feature BoX: part of the small signal board /separate module which contains 100 Hz processing, extra features and AutoTV algorithms (FBX6= based on PICNIC, FBX7= based on PICNIC and Eagle)
ATV	See Auto TV	FDS	Full Dual Screen (same as FDW)
Auto TV	A hardware and software control system that measures picture content, and adapts image parameters in a dynamic way	FDW	Full Dual Window (same as FDS)
AV	External (source), entering the set by SCART or by cinches (jacks)	FLASH	FLASH memory
B/G	Monochrome TV system. Sound carrier distance is 5.5 MHz	FM	Field Memory or Frequency Modulation
BTSC	Broadcast Television Standard Committee. Multiplex FM stereo sound system, originating from the USA and used e.g. in LATAM and AP-NTSC countries	FTV	Flat TeleVision
B-CC/TXT	Blue TeleteXT	Gb/s	Giga bits per second
C	Centre channel (audio)	G-CC/TXT	Green TeleteXT
CL	Constant Level: audio output to connect with an external amplifier	H	H_sync to the module
ComPair	Computer aided rePair	H_2FH_AD_OUT	H-sync output from AD converter
CSM	Customer Service Mode	HDI	High Definition Interface
CLK_2FH	Clock output AD converter	H-DVI	H_sync from DVI to RGB converter chip
CTI	Color Transient Improvement: manipulates steepness of chroma transients	HIP	High-end video Input Processor (TDA9320): video and chroma decoder.
CVBS	Composite Video Blanking and Synchronization	HOP	High-end video Output Processor (TDA9330): video, sync, and geometry controller
DAC	Digital to Analogue Converter	HP	HeadPhone
DBE	Dynamic Bass Enhancement: extra low frequency amplification	H_DVI	H-sync from DVI-to-RGB converter chip
DDC	See "E-DDC"	H_SYNC_VGA	H-sync on VGA connector
D/K	Monochrome TV system. Sound carrier distance is 6.5 MHz	I	Monochrome TV system. Sound carrier distance is 6.0 MHz
DFU	Directions For Use: owner's manual	I2C	Integrated IC bus
DNR	Digital Noise Reduction: noise reduction feature of the set	I2S	Integrated IC Sound bus
DRAM	Dynamic RAM	IF	Intermediate Frequency
DSP	Digital Signal Processing	Interlaced	Scan mode where two fields are used to form one frame. Each field contains half the number of the total amount of lines. The fields are written in "pairs", causing line flicker.
DST	Dealer Service Tool: special remote control designed for service technicians	IR	Infra Red
DVD	Digital Versatile Disc	IRQ	Interrupt Request
DVI(-D)	Digital Visual Interface (D= digital only)	ITV	Institutional TeleVision, TV sets for hotels, hospitals etc.
		Last Status	The settings last chosen by the customer and read and stored in RAM or in the NVM. They are called at start-up of the set to configure it according to the customer's preferences

LATAM	Latin America	RC5 / RC6	Signal protocol from the remote control receiver
LCD	Liquid Crystal Display	RESET	RESET signal
LED	Light Emitting Diode	ROM	Read Only Memory
L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I	R-CC/TXT	Red Teletext
LS	Loudspeaker	SAM	Service Alignment Mode
LVDS	Low Voltage Differential Signaling	S/C	Short Circuit
Mbps	Mega bits per second	SCART	Syndicat des Constructeurs d'Appareils Radiorecepteurs et Televisieurs
M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz	SCL	Serial Clock I2C
MOSFET	Metal Oxide Silicon Field Effect Transistor, switching device	SCL-F	CLock Signal on Fast I2C bus
MPEG	Motion Pictures Experts Group	SD	Standard Definition
MSP	Multi-standard Sound Processor: ITT sound decoder	SDA	Serial Data I2C
MUTE	MUTE Line	SDA-F	DAta Signal on Fast I2C bus
NC	Not Connected	SDRAM	Synchronous DRAM
NICAM	Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, mainly used in Europe.	SECAM	SEquence Couleur Avec Memoire. Color system mainly used in France and East Europe. Color carriers= 4.406250 MHz and 4.250000 MHz
NTC	Negative Temperature Coefficient, non-linear resistor	SIF	Sound Intermediate Frequency
NTSC	National Television Standard Committee. Color system mainly used in North America and Japan. Color carrier NTSC M/N= 3.579545 MHz, NTSC 4.43= 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)	SMPS	Switched Mode Power Supply
NVM	Non-Volatile Memory: IC containing TV related data such as alignments	SOG	Sync-On-Green
O/C	Open Circuit	SOPS	Self Oscillating Power Supply
OSD	On Screen Display	S/PDIF	Sony Philips Digital InterFace
OTC	On screen display Teletext and Control; also called Artistic (SAA5800)	SRAM	Static RAM
OTP	One Time Programmable	SSP	Small Signal Board
P50	Project 50: communication protocol between TV and peripherals	SSP	Small Signal Panel
PAL	Phase Alternating Line. Color system mainly used in West Europe (color carrier= 4.433619 MHz) and South America (color carrier PAL M= 3.575612 MHz and PAL N= 3.582056 MHz)	STBY	STandBY
PCB	Printed Circuit Board (same as "PWB")	SUB_Y/U/V_2FH	Y/U/V input from I/O cel
PCM	Pulse Code Modulation	SOGIN	Sync-On-Green input AD converter
PDP	Plasma Display Panel	SOGOUT	Sync-On-Green output AD converter
PFC	Power Factor Corrector (or Pre-conditioner)	SVGA	800x600 (4:3)
PICNIC	Peripheral Integrated Combined Network IC (SAA4978): main IC for 100 Hz features and feature processing	SVHS	Super Video Home System
PIP	Picture In Picture	SW	Software
PLL	Phase Locked Loop. Used for e.g. FST tuning systems. The customer can give directly the desired frequency	SXGA	1280x1024
POR	Power On Reset, signal to reset the P	SYNCDCT	SOGOUT from AD converter
Progressive Scan	Scan mode where all scan lines are displayed in one frame at the same time, creating a double vertical resolution.	TFT	Thin Film Transistor
PTC	Positive Temperature Coefficient, non-linear resistor	THD	Total Harmonic Distortion
PWB	Printed Wiring Board (same as "PCB")	TXT	Teletext
PWM	Pulse Width Modulation	uP	Microprocessor
RAM	Random Access Memory	U_2FH_0..7	U digital output AD converter port 0 to 7 (7= MSB)
RGB	Red, Green, and Blue. The primary color signals for TV. By mixing levels of R, G, and B, all colors (Y/C) are reproduced.	UXGA	1600x1200 (4:3)
RGB_DVI	RGB video input on DVI converter chip	V	V-sync to the module
RGB_VGA	RGB video input on VGA connector	V_2FH_0..7	V digital output AD converter port 0 to 7 (7= MSB)
RC	Remote Control	V_2FH_AD_OUT	V-sync output from AD converter
		VCR	Video Cassette Recorder
		V_DVI	V-sync from DVI-to-RGB converter chip
		VESA	Video Electronics Standards Association
		VGA	640x480 (4:3)
		VL	Variable Level out: processed audio output toward external amplifier
		V_SYNC_VGA	V-sync on VGA connector
		WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
		WXGA	1280x768 (15:9)
		XTAL	Quartz crystal
		XGA	1024x768 (4:3)
		Y	Luminance signal
		Y_2FH_0..7	Y digital output AD converter port 0 to 7 (7= MSB)
		Y/C	Luminance (Y) and Chrominance (C) signal
		YPbPr	Component video. Luminance and scaled color difference signals (B-Y and R-Y)
		YUV	Component video
		YUV_2FH	YUV video input AD converter
		YUV_VGA	YUV output from matrix (RGB to YUV)

9.13 IC Data Sheets

This section shows the internal block diagrams and pin layouts of ICs that are drawn as "black boxes" in the electrical diagrams (with the exception of "memory" and "logic" ICs).

9.13.1 Diagram B3C, T8F24EF (IC7724)

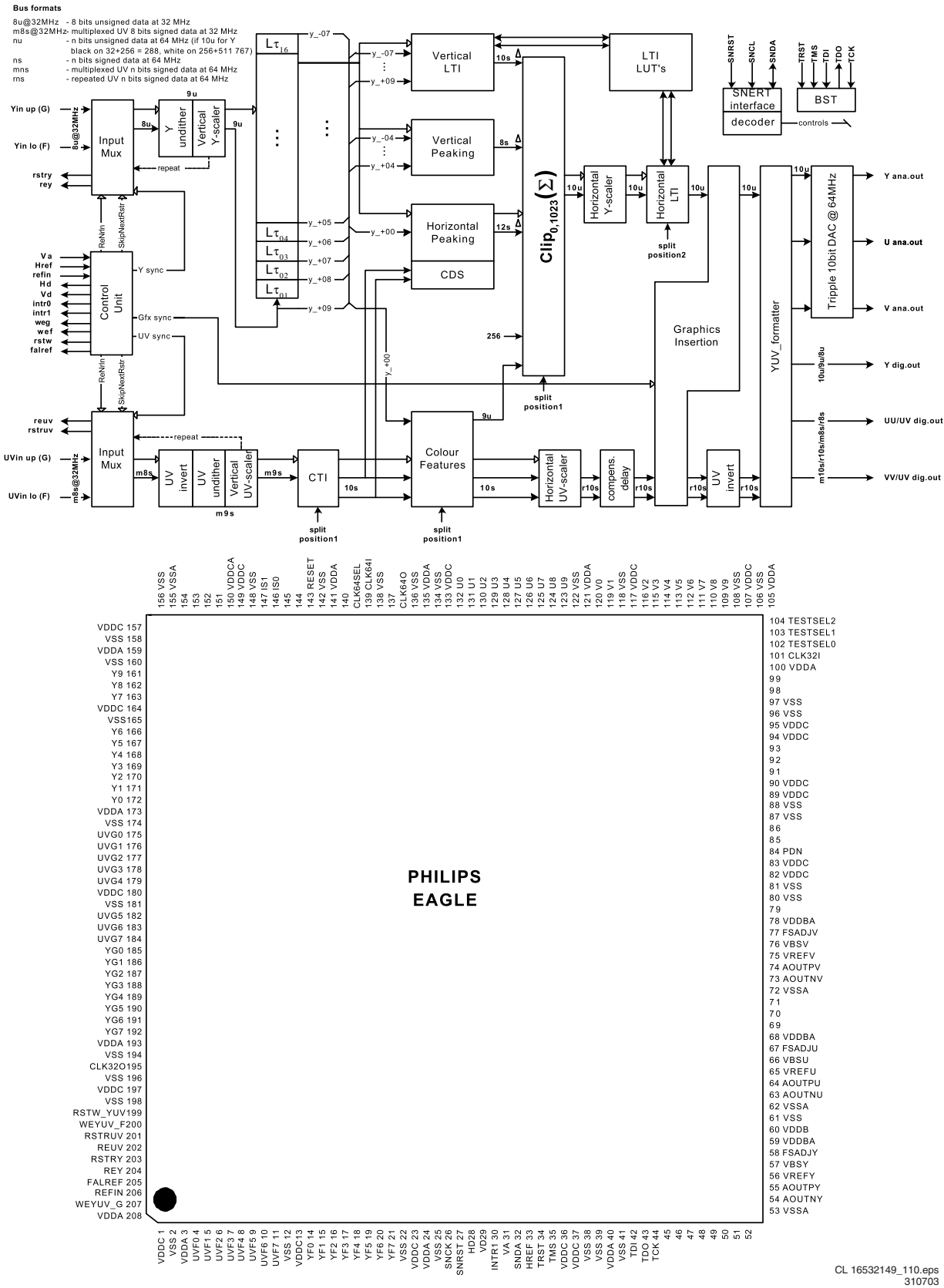
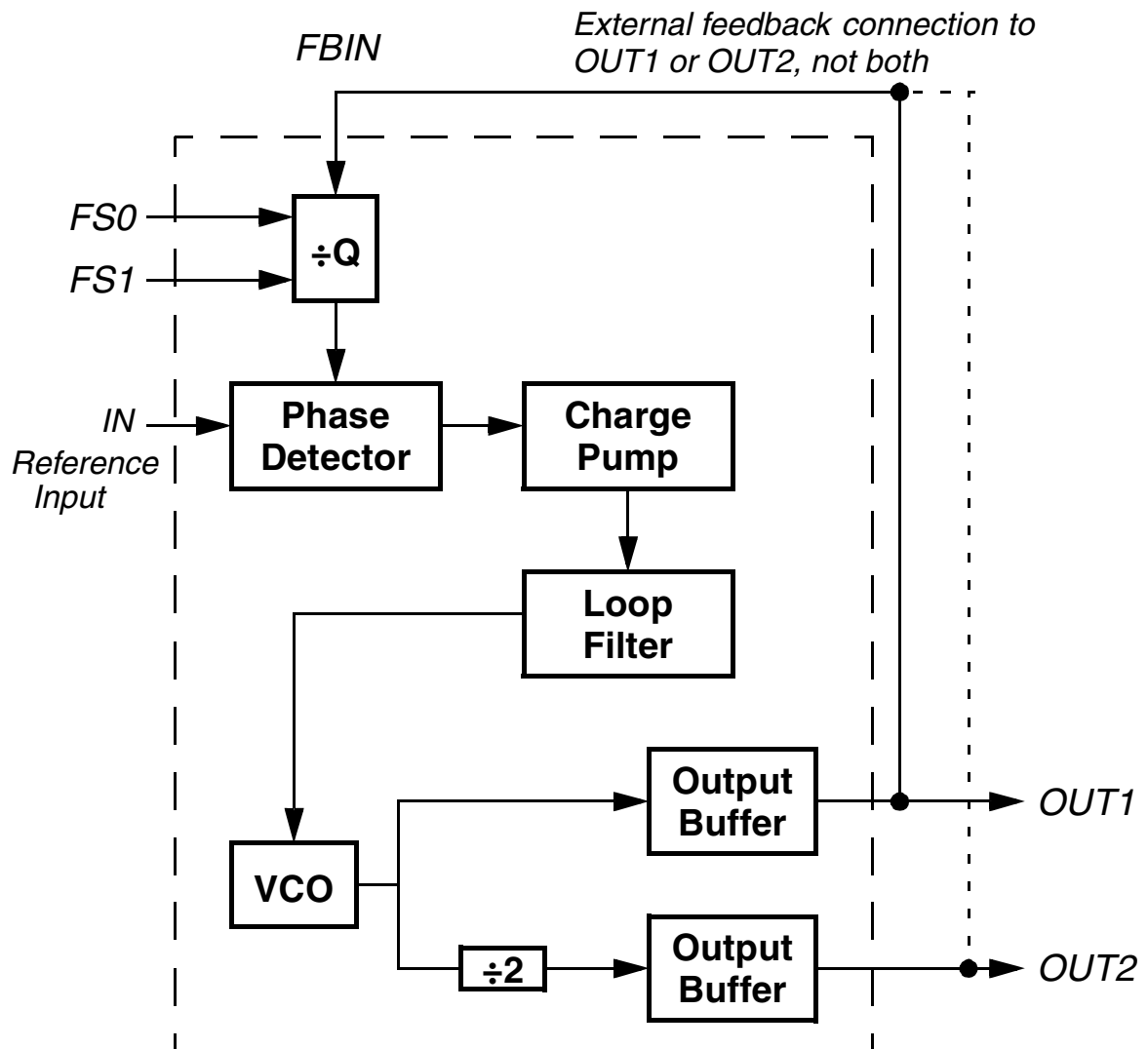


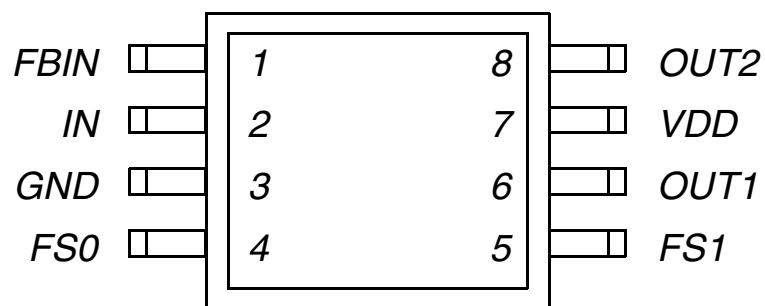
Figure 9-20 Internal Block Diagram and Pin Configuration

9.13.2 Diagram B3D, CY23S02 (IC7746)

Block Diagram



Pin Configuration

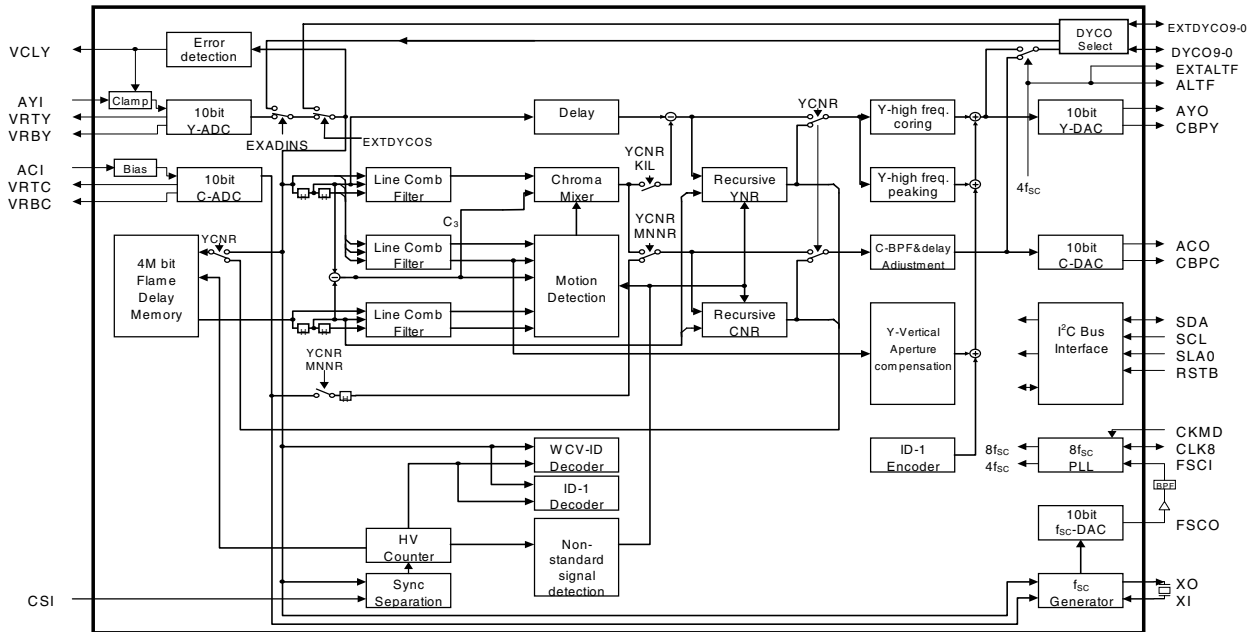


CL 36532075_067.eps
300104

Figure 9-21 Internal Block Diagram and Pin Configuration

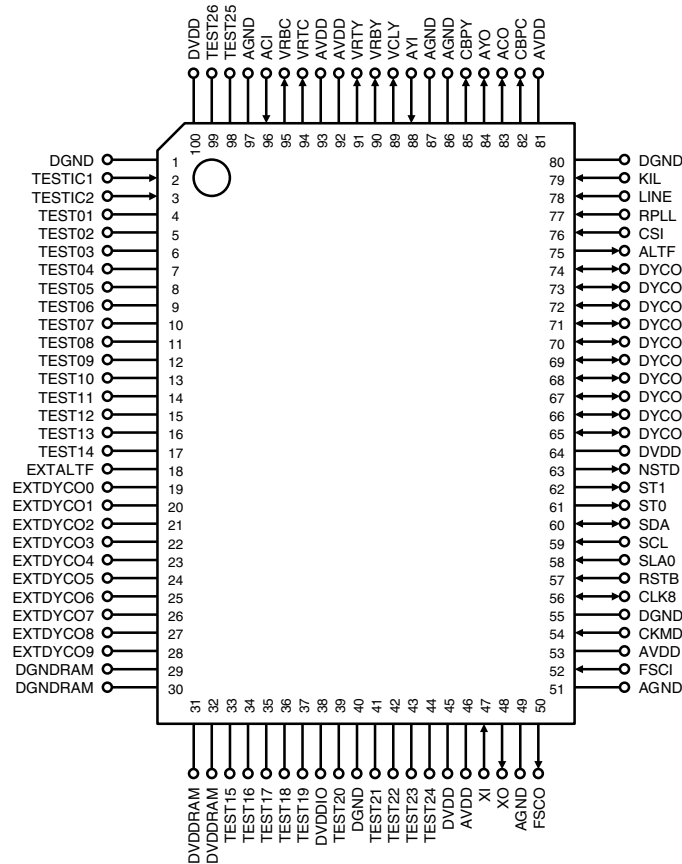
9.13.3 Diagram B11, uPD64083GF (IC7B00)

Block Diagram



Pin Configuration (Top View)

100-pin plastic QFP (14 20)
PD64083GF-3BA



CL 36532038_115.eps
020703

Figure 9-22 Internal Block Diagram and Pin Configuration

9.13.4 Diagram B14A, TEA6415 (IC7124)

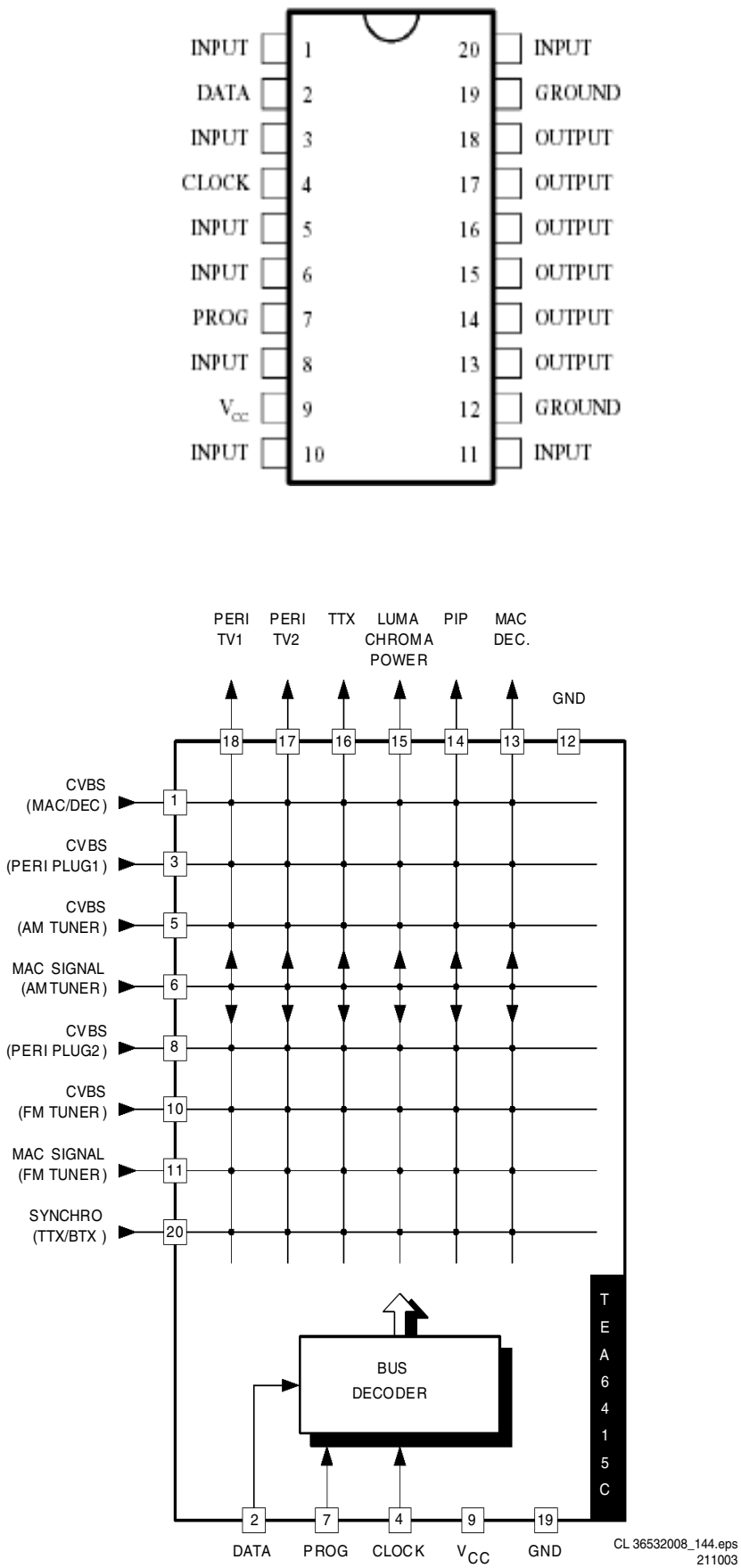
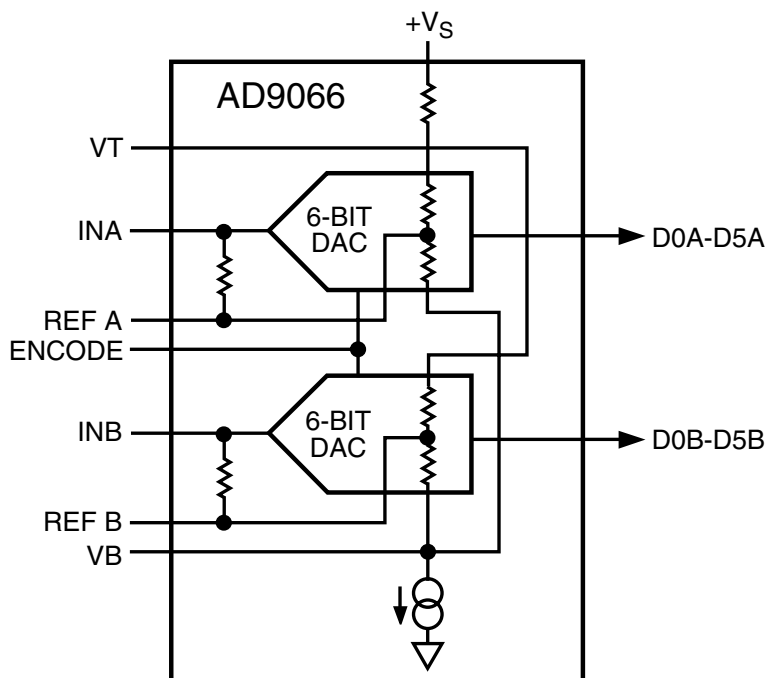


Figure 9-23 Internal Block Diagram and Pin Configuration

FUNCTIONAL BLOCK DIAGRAM



PIN CONFIGURATIONS

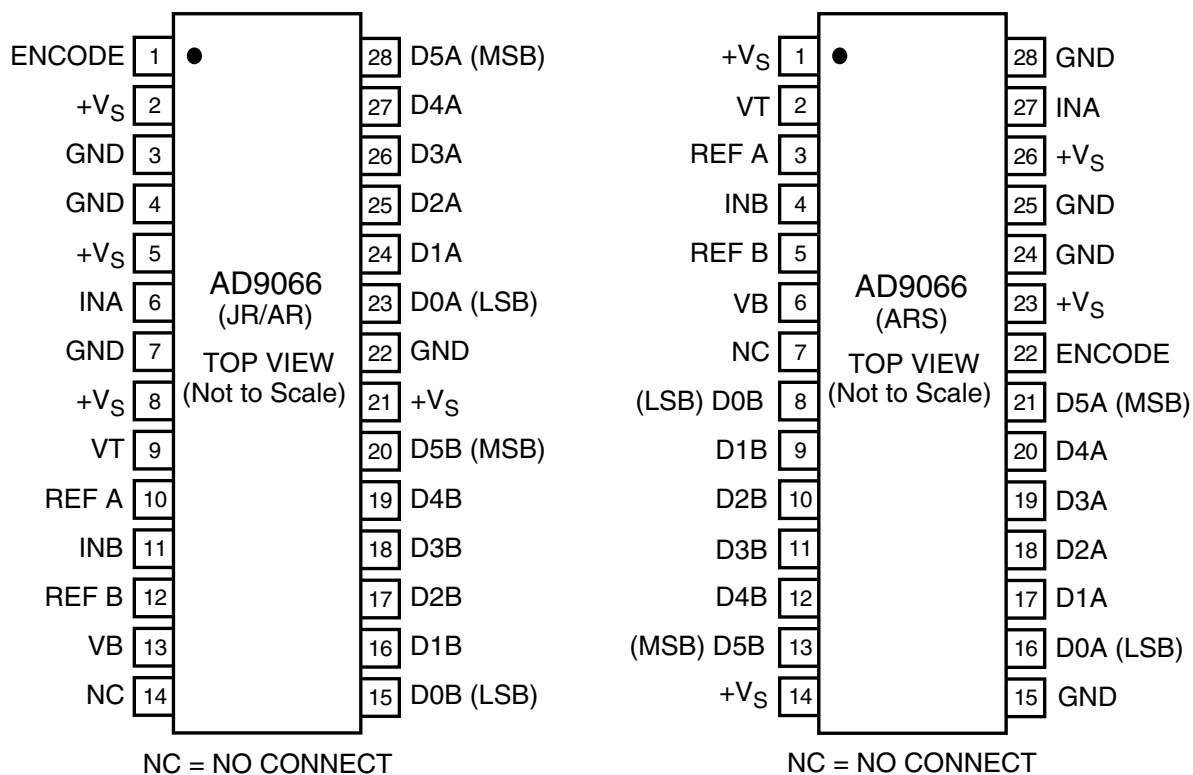


Figure 9-24 Internal Block Diagram and Pin Configuration

10. Spare Parts List and Exploded View

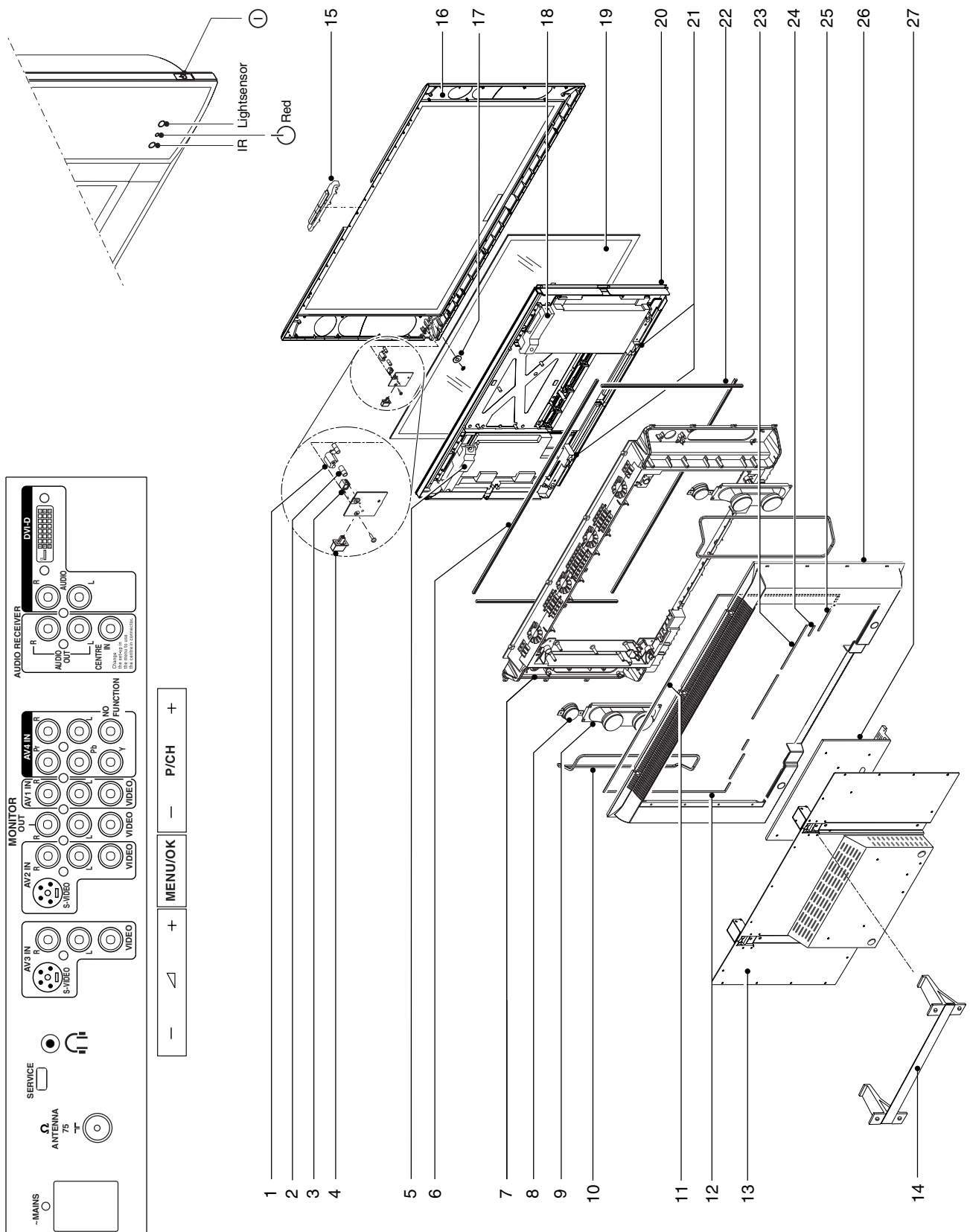


Figure 10-1 Exploded view

Mechanical Parts List

1	3122 124 36071	Lens
2	3122 124 36271	Light guide
3	3122 124 36081	Day light filter
4	3122 128 13901	On/off knob
5	3122 128 14451	PDP Bracket right
6	3122 358 76463	EMC shielding foam long
7	3122 128 14231	Shielding frame
8	2422 264 00432	Tweeter
9	2422 264 00433	Loudspeaker twin
10	3122 358 76221	Loudspeaker foam
11	3122 358 76451	EMC shielding foam top
12	3122 358 76441	EMC shielding foam L+R
13	3122 128 14891	Metal back plate
14	3122 128 14811	Wall mounting bracket
15	3104 328 29811	Top control
16	3122 357 22511	Front assy (US)
17	3122 124 35682	Washer
18	3122 128 14451	PDP Bracket left
19	3122 124 90811	Glass plate
20	9322 195 45682	Display S42SD-YB04
21	3122 128 14461	PDP bracket large
22	3122 358 76474	EMC shielding foam short
23	3122 358 76822	EMC sh. foam bottom 3
24	3122 358 76392	EMC sh. foam bottom 2
25	3122 358 76382	EMC sh. foam bottom 1
26	3122 128 14221	Back display assy
27	3122 128 14861	Connector plate
	3122 358 76432	EMC sh. foam bottom 6
	3122 587 76822	EMC sh. foam bottom 4
	2422 070 98223	Mains cord US
	3122 358 76342	Mains inlet
	3128 147 14461	RC4305/01
	3122 128 14302	Mounting kit (US)

Set Level

Various

0002	3122 128 14221	Back display 42"
0005	3122 128 14891	Metal back assy
0007	3122 124 90811	42" Glass plate
0009	3122 121 36241	Mounting plate
0017	3122 128 14461	PDP bracket Large assy
0018	3122 128 14441	PDP bracket left
0019	3122 128 14451	PDP bracket right
0033	4822 401 11795	Wire relief 15mm
0095	3122 128 14951	Wall mount assy
0098	3122 128 13921	Mounting kit assy
1050▲	3122 357 21064	Audio amplifier panel
1103	3122 357 22511	PCA LED + Switch
1104▲	9965 000 17797	S42SD-YB04
1105	3122 357 22052	EMC filter panel
8302	3104 311 05171	Cable 9p/860/9p

Audio Amplifier [A]

Various

0302	2422 025 16846	Connector 9p m h
0303	2422 025 16702	Connector 5p m h
0304	2422 025 16543	Connector 4p m
0388	2422 025 16704	Connector 8p m
1050	3122 357 21064	Audio amplifier panel
1730▲	4822 071 52502	Fuse 2.5A
1740▲	4822 071 52502	Fuse 2.5A

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2201	4822 126 13193	4.7nF 10% 63V
2202	4822 124 23002	10μF 16V
2204	4822 126 14226	82pF 5% 50V 0603
2205	4822 126 13193	4.7nF 10% 63V
2206	4822 124 23002	10μF 16V
2207	4822 126 14226	82pF 5% 50V 0603
2212	5322 126 11578	1nF 10% 50V 0603
2215	4822 126 13193	4.7nF 10% 63V
2216	4822 124 23002	10μF 16V
2218	4822 126 14226	82pF 5% 50V 0603
2220	4822 126 13193	4.7nF 10% 63V
2221	4822 124 23002	10μF 16V
2222	4822 126 14226	82pF 5% 50V 0603
2224	2238 586 59812	100nF 20% 50V 0603
2225	2238 586 59812	100nF 20% 50V 0603
2233	2238 910 15647	68nF 10% 25V 0805
2234	2238 586 59812	100nF 20% 50V 0603
2238	2238 586 59812	100nF 20% 50V 0603
2239	2238 586 59812	100nF 20% 50V 0603

2243	2238 910 15647	68nF 10% 25V 0805
2244	2238 586 59812	100nF 20% 50V 0603
2255	2238 916 15641	22nF 10% 25V 0603
2256	2238 916 15641	22nF 10% 25V 0603
2260	2238 586 59812	100nF 20% 50V 0603
2261	2238 586 59812	100nF 20% 50V 0603
2270	2238 916 15641	22nF 10% 25V 0603
2271	2238 916 15641	22nF 10% 25V 0603
2309	4822 126 14247	1.5nF 50V 0603
2310	4822 126 14226	82pF 5% 50V 0603
2315	4822 124 12084	1μF 20% 50V
2316	2238 586 59812	100nF 20% 50V 0603
2318	2238 586 59812	100nF 20% 50V 0603
2319	4822 124 12084	1μF 20% 50V
2330	2238 586 59812	100nF 20% 50V 0603
2334	2020 012 93764	220μF 20% 35V
2335	2238 586 59812	100nF 20% 50V 0603
2340	5322 126 11583	10nF 10% 50V 0603
2355	2238 586 59812	100nF 20% 50V 0603
2359	2238 586 59812	100nF 20% 50V 0603
2360	2020 012 93764	220μF 20% 35V
2365	2020 552 96326	220nF 10% 16V
2366	2020 552 96326	220nF 10% 16V
2409	4822 126 14247	1.5nF 50V 0603
2410	4822 126 14226	82pF 5% 50V 0603
2415	4822 124 12084	1μF 20% 50V
2416	2238 586 59812	100nF 20% 50V 0603
2418	2238 586 59812	100nF 20% 50V 0603
2419	4822 124 12084	1μF 20% 50V
2430	2238 586 59812	100nF 20% 50V 0603
2434	2020 012 93764	220μF 20% 35V
2435	2238 586 59812	100nF 20% 50V 0603
2440	5322 126 11583	10nF 10% 50V 0603
2455	2238 586 59812	100nF 20% 50V 0603
2459	2238 586 59812	100nF 20% 50V 0603
2460	2020 012 93764	220μF 20% 35V
2465	2020 552 96326	220nF 10% 16V
2466	2020 552 96326	220nF 10% 16V
2509	4822 126 14247	1.5nF 50V 0603
2510	4822 126 14226	82pF 5% 50V 0603
2515	4822 124 12084	1μF 20% 50V
2516	2238 586 59812	100nF 20% 50V 0603
2518	2238 586 59812	100nF 20% 50V 0603
2519	4822 124 12084	1μF 20% 50V
2530	2238 586 59812	100nF 20% 50V 0603
2534	2020 012 93764	220μF 20% 35V
2535	2238 586 59812	100nF 20% 50V 0603
2540	5322 126 11583	10nF 10% 50V 0603
2555	2238 586 59812	100nF 20% 50V 0603
2559	2238 586 59812	100nF 20% 50V 0603
2560	2020 012 93764	220μF 20% 35V
2565	2020 552 96326	220nF 10% 16V
2566	2020 552 96326	220nF 10% 16V
2609	4822 126 14247	1.5nF 50V 0603
2610	4822 126 14226	82pF 5% 50V 0603
2615	4822 124 12084	1μF 20% 50V
2616	2238 586 59812	100nF 20% 50V 0603
2618	2238 586 59812	100nF 20% 50V 0603
2619	4822 124 12084	1μF 20% 50V
2630	2238 586 59812	100nF 20% 50V 0603
2634	2020 012 93764	220μF 20% 35V
2635	2238 586 59812	100nF 20% 50V 0603
2640	5322 126 11583	10nF 10% 50V 0603
2655	2238 586 59812	100nF 20% 50V 0603
2659	2238 586 59812	100nF 20% 50V 0603
2660	2020 012 93764	220μF 20% 35V
2665	2020 552 96326	220nF 10% 16V
2666	2020 552 96326	220nF 10% 16V
2730	2020 012 93764	220μF 20% 35V
2732	2020 012 93764	220μF 20% 35V
2734	4822 124 12084	1μF 20% 50V
2740	2020 012 93764	220μF 20% 35V
2742	2020 012 93764	220μF 20% 35V
2744	4822 124 12084	1μF 20% 50V
2752	4822 124 23002	10μF 16V
2753	4822 124 23002	10μF 16V
2759	5322 126 11578	1nF 10% 50V 0603
2760	5322 124 14945	22μF 20% 35V
2770	5322 126 11578	1nF 10% 50V 0603
2771	5322 126 11578	1nF 10% 50V 0603
2780	5322 126 11578	1nF 10% 50V 0603
2781	5322 126 11578	1nF 10% 50V 0603
2799	5322 126 11583	10nF 10% 50V 0603

—W—

3201	4822 051 30221	220Ω 5% 0.062W
3202	4822 051 30102	1kΩ 5% 0.062W
3203	4822 051 30272	2.7kΩ 5% 0.062W
3205	4822 051 30221	220Ω 5% 0.062W
3206	4822 051 30102	1kΩ 5% 0.062W
3207	4822 051 30272	2.7kΩ 5% 0.062W
3210	4822 051 30333	33kΩ 5% 0.062W

3211	4822 117 13632	100kΩ 1% 0.0603 0.62W
3215	4822 051 30221	220Ω 5% 0.062W
3216	4822 051 30102	1kΩ 5% 0.062W
3217	4822 051 30272	2.7kΩ 5% 0.062W
3220	4822 051 30221	220Ω 5% 0.062W
3221	4822 051 30102	1kΩ 5% 0.062W
3222	4822 051 30272	2.7kΩ 5% 0.062W
3230	4822 051 30101	100Ω 5% 0.062W
3231	4822 051 30222	2.2kΩ 5% 0.062W
3232	4822 051 30152	1.5Ω 5% 0.062W
3233	4822 051 30222	2.2kΩ 5% 0.062W
3234	4822 051 30561	560Ω 5% 0.062W
3240	4822 051 30101	100Ω 5% 0.062W
3241	4822 051 30222	2.2kΩ 5% 0.062W
3242	4822 051 30152	1.5Ω 5% 0.062W
3243	4822 051 30222	2.2kΩ 5% 0.062W
3244	4822 051 30561	560Ω 5% 0.062W
3255	4822 117 11817	1.2kΩ 1% 0.0625W
3256	4822 051 30332	3.3Ω 5% 0.062W
3257	4822 051 30471	47Ω 5% 0.062W
3259	4822 117 12917	1Ω 5% 0.062W
3270	4822 117 11817	1.2kΩ 1% 0.0625W
3271	4822 051 30332	3.3Ω 5% 0.062W
3272	4822 051 30471	47Ω 5% 0.062W
3274	4822 117 12917	1Ω 5% 0.062W
3301	4822 051 30102	1kΩ 5% 0.062W
3302	4822 051 30472	4.7Ω 5% 0.062W
3303	4822 051 30102	1kΩ 5% 0.062W
3304	4822 051 30472	4.7Ω 5% 0.062W
3306	5322 117 13056	8.2kΩ 1% 0.063W 0603
3307	4822 117 13632	100kΩ 1% 0.0603 0.62W
3308	4822 117 13632	100kΩ 1% 0.0603 0.62W
3309	4822 051 30181	180Ω 5% 0.062W
3310	4822 117 12864	82kΩ 5% 0.6W
3311	4822 117 12917	1Ω 5% 0.062W
3315▲	5322 117 11726	10Ω 5%
3318▲	5322 117 11726	10Ω 5%
3325	4822 117 11449	2.2kΩ 5% 0.1W 0805
3327	4822 117 11449	2.2kΩ 5% 0.1W 0805
3328	4822 051 30102	1kΩ 5% 0.062W
3330▲	5322 117 11726	10Ω 5%
3336	4822 051 30475	4.7MΩ 5% 0.062W 0603
3337▲	5322 117 11726	10Ω 5%
3340	4822 051 30103	10kΩ 5% 0.062W
3355▲	5322 117 11726	10Ω 5%
3361	4822 051 30475	4.7MΩ 5% 0.062W 0603
3362▲	5322 117 11726	10Ω 5%
3401	4822 051 30102	1kΩ 5% 0.062W
3402	4822 051 30472	4.7Ω 5% 0.062W
3403	4822 051 30102	1kΩ 5% 0.062W
3404	4822 051 30472	4.7Ω 5% 0.062W
3406	5322 117 13056	8.2kΩ 1% 0.063W 0603
3407	4822 117 13632	100kΩ 1% 0.0603 0.62W
3408	4822 117 13632	100kΩ 1% 0.0603 0.62W
3409	4822 051 30181	180Ω 5% 0.062W
3410	4822 117 12864	82kΩ 5% 0.6W
3411	4822 051 30153	15kΩ 5% 0.062W
3415▲	5322 117 11726	10Ω 5%
3418▲	5322 117 11726	10Ω 5%
3425	4822 117 11449	2.2kΩ 5% 0.1W 0805
3427	4822 117 11449	2.2kΩ 5% 0.1W 0805
3428	4822 051 30102	1kΩ 5% 0.062W
3430▲	5322 117 11726	10Ω 5%
3436	4822 051 30475	4.7MΩ 5% 0.062W 0603
3437▲	5322 117 11726	10Ω 5%
3440	4822 051 30103	10kΩ 5% 0.062W
3455▲	5322 117 11726	10Ω 5%
3461	4822 051 30475	4.7MΩ 5% 0.062W 0603
3462▲	5322 117 11726	10Ω 5%
3501	4822 051 30102	1kΩ 5% 0.062W
3502	4822 051 30472	4.7Ω 5% 0.062W
3503	4822 051 30102	1kΩ 5% 0.062W
3504	4822 051 30472	4.7Ω 5% 0.062W
3506	5322 117 13056	8.2kΩ 1% 0.063W 0603
3507	4822 117 13632	100kΩ 1% 0.0603 0.62W
3508	4822 117 13632	100kΩ 1% 0.0603 0.62W
3509	4822 051 30181	180Ω 5% 0.062W
3510	4822 117 12864	82kΩ 5% 0

3562▲	5322 117 11726	10Ω 5%
3601	4822 051 30102	1kΩ 5% 0.062W
3602	4822 051 30472	4.7Ω 5% 0.062W
3603	4822 051 30102	1kΩ 5% 0.062W
3604	4822 051 30472	4.7Ω 5% 0.062W
3606	5322 117 13056	8.2kΩ 1% 0.063W 0603
3607	4822 117 13632	100kΩ 1% 0603 0.62W
3608	4822 117 13632	100kΩ 1% 0603 0.62W
3609	4822 051 30181	180Ω 5% 0.062W
3610	4822 117 12864	82kΩ 5% 0.6W
3611	4822 051 30223	22kΩ 5% 0.062W
3615▲	5322 117 11726	10Ω 5%
3618▲	5322 117 11726	10Ω 5%
3625	4822 117 11449	2.2kΩ 5% 0.1W 0805
3627	4822 117 11449	2.2kΩ 5% 0.1W 0805
3628	4822 051 30102	1kΩ 5% 0.062W
3630▲	5322 117 11726	10Ω 5%
3636	4822 051 30475	4.7MΩ 5% 0.062W 0603
3637▲	5322 117 11726	10Ω 5%
3640	4822 051 30103	10kΩ 5% 0.062W
3655▲	5322 117 11726	10Ω 5%
3661	4822 051 30475	4.7MΩ 5% 0.062W 0603
3662▲	5322 117 11726	10Ω 5%
3732	4822 051 30272	2.7kΩ 5% 0.062W
3733	4822 051 30102	1kΩ 5% 0.062W
3742	4822 051 30272	2.7kΩ 5% 0.062W
3743	4822 051 30102	1kΩ 5% 0.062W
3749	4822 051 30103	10kΩ 5% 0.062W
3750	4822 051 30471	47Ω 5% 0.062W
3751	4822 117 12925	47kΩ 1% 0.063W 0603
3752	4822 117 12925	47kΩ 1% 0.063W 0603
3754	4822 051 30102	1kΩ 5% 0.062W
3755	4822 117 13632	100kΩ 1% 0603 0.62W
3760	4822 051 30471	47Ω 5% 0.062W
3765	4822 117 13632	100kΩ 1% 0603 0.62W
3770	4822 117 13632	100kΩ 1% 0603 0.62W
3771	4822 117 13632	100kΩ 1% 0603 0.62W
3780	4822 117 13632	100kΩ 1% 0603 0.62W
3781	4822 117 13632	100kΩ 1% 0603 0.62W



5335	4822 157 11717	Bead 50Ω 100MHz
5360	4822 157 11717	Bead 50Ω 100MHz
5365	2422 536 00338	33μH 10% SMD 10mm
5435	4822 157 11717	Bead 50Ω 100MHz
5460	4822 157 11717	Bead 50Ω 100MHz
5465	2422 536 00338	33μH 10% SMD 10mm
5535	4822 157 11717	Bead 50Ω 100MHz
5560	4822 157 11717	Bead 50Ω 100MHz
5565	2422 536 00338	33μH 10% SMD 10mm
5635	4822 157 11717	Bead 50Ω 100MHz
5660	4822 157 11717	Bead 50Ω 100MHz
5665	2422 536 00338	33μH 10% SMD 10mm
5714	4822 157 11717	Bead 50Ω 100MHz
5719	4822 157 11717	Bead 50Ω 100MHz
5725	4822 157 11717	Bead 50Ω 100MHz
5753	2422 549 43769	Bead 30Ω 100MHz



6328	4822 130 11397	BAS316
6334	4822 130 11148	UDZ4.7B
6335	4822 130 11148	UDZ4.7B
6355	4822 130 11148	UDZ4.7B
6356	4822 130 11148	UDZ4.7B
6359	4822 130 11148	UDZ4.7B
6360	4822 130 11148	UDZ4.7B
6428	4822 130 11397	BAS316
6434	4822 130 11148	UDZ4.7B
6435	4822 130 11148	UDZ4.7B
6455	4822 130 11148	UDZ4.7B
6456	4822 130 11148	UDZ4.7B
6459	4822 130 11148	UDZ4.7B
6460	4822 130 11148	UDZ4.7B
6528	4822 130 11397	BAS316
6534	4822 130 11148	UDZ4.7B
6535	4822 130 11148	UDZ4.7B
6555	4822 130 11148	UDZ4.7B
6556	4822 130 11148	UDZ4.7B
6559	4822 130 11148	UDZ4.7B
6560	4822 130 11148	UDZ4.7B
6628	4822 130 11397	BAS316
6634	4822 130 11148	UDZ4.7B
6635	4822 130 11148	UDZ4.7B
6655	4822 130 11148	UDZ4.7B
6656	4822 130 11148	UDZ4.7B
6659	4822 130 11148	UDZ4.7B
6660	4822 130 11148	UDZ4.7B
6732	4822 130 11551	UDZS10B
6742	4822 130 11551	UDZS10B
6750	4822 130 10328	BAV99W

6760	4822 130 10328	BAV99W
7211	3198 010 42320	BC857BW
7225	4822 209 30095	LM833D
7238	4822 209 30095	LM833D
7260	4822 209 30095	LM833D
7302	3198 010 42310	BC847BW
7303	3198 010 42310	BC847BW
7315	9338 028 20668	LM311D
7330	4822 130 42804	BC817-25
7340	3198 010 42310	BC847BW
7355	5322 130 60845	BC807-25
7365	9322 161 86668	IRF7343
7402	3198 010 42310	BC847BW
7403	3198 010 42310	BC847BW
7415	9338 028 20668	LM311D
7430	4822 130 42804	BC817-25
7440	3198 010 42310	BC847BW
7455	5322 130 60845	BC807-25
7465	9322 161 86668	IRF7343
7502	3198 010 42310	BC847BW
7503	3198 010 42310	BC847BW
7515	9338 028 20668	LM311D
7530	4822 130 42804	BC817-25
7540	3198 010 42310	BC847BW
7555	5322 130 60845	BC807-25
7565	9322 161 86668	IRF7343
7602	3198 010 42310	BC847BW
7603	3198 010 42310	BC847BW
7615	9338 028 20668	LM311D
7630	4822 130 42804	BC817-25
7640	3198 010 42310	BC847BW
7655	5322 130 60845	BC807-25
7665	9322 161 86668	IRF7343
7735	4822 130 60142	BC869
7736	3198 010 42310	BC847BW
7745	5322 130 61569	BC868
7746	3198 010 42320	BC857BW
7751	3198 010 42310	BC847BW
7753	3198 010 42320	BC857BW
7755	3198 010 42310	BC847BW
7761	3198 010 42320	BC857BW

Small Signal Panel [B]

Various

0002	3122 121 36311	Click stud
0004	3122 121 36151	Standoff stud
0020	3122 128 14631	Connector plate USA
0072	3104 301 24451	Frame SSB A-side
0073	3104 301 24461	Cover SSB A-side
0074	3104 301 24221	Cover SSB Z-side
0075	3104 301 24201	Frame SSB Z-side
0076	3104 301 24481	Cover Z-side VGA-EPLD
0079	3104 308 11161	Shielding cover
0080	3104 301 24471	Frame SSB Z-side
0103	3104 303 10871	EMC foam tuner
0105	3104 303 10822	EMC foam VGA-LCD
0166	3122 128 14661	Connector plate FTY37
0167	3122 121 36161	Connector plate
0168	3122 121 36171	Connector plate bracket
0201	3122 358 76431	EMC foam rear BOT6
0202	3122 358 76701	EMC foam
0203	3122 358 76701	EMC foam
0251	4822 404 31443	Relief
0308	3104 304 23841	Xtal grommet
0356	2422 034 21798	Screwlock
0604	3104 317 05651	Software (check Prod.Surv.)
1001	2422 543 89022	Xtal 6MHz 20P
1001	3104 328 29701	SSB PDP US
1061	3122 358 76371	Mains inlet delta
1063	3104 328 32351	SSB assy US PDP
1102	3122 357 21931	Connector plate US
1308	2422 543 01183	Xtal 3.579545MHz 16p
1403	2422 086 11092	Fuse 500mA 50V F SMD
1404	2422 127 00543	Switch 1p 2pos
1406	2422 549 44043	Filt. 4.5MHz TPSCC*MB
1410	2422 549 44377	SAW 45.75MHz M1967L
1411	2422 549 44534	Filt. 4.5MHz
1702	2422 540 98456	Resonator 12MHz
1A00	2422 543 89019	Xtal 18.432MHz 12p
1B01	2422 543 01288	Xtal 20MHz
1E02	2422 025 17274	Connector 10p m
1E04	2422 025 17103	Connector 3p m SMD
1I01	2422 026 05201	Soc CINCH 3p f rdwhyte
1I04	2422 026 05201	Soc CINCH 3p f rdwhyte
1I05	2422 026 05213	Soc CINCH 3p bkwhrd

1I07	2422 026 05541	Soc CINCH 3p f grburd
1I08	4822 267 31014	Socket headphone
1I09	2422 026 05133	Connector SVHS 4p f
1I10	2422 026 05201	Soc CINCH 3p f rdwhyte
1I12	2422 026 05133	Connector SVHS 4p f
1I15	2422 026 05213	Soc CINCH 3p bkwhrd
1I17	2422 026 05201	Soc CINCH 3p f rdwhyte
1I19	4822 267 10748	Connector 3p
1I20	2422 026 05054	Soc CINCH 2P f whrd
1T01▲	3139 147 21131	Tuner UV1338/A F S-4
1V21	2422 033 00484	Soc DVI 24p f
1V48	2422 549 45325	Bead 67Ω at 100MHz.
1V49	2422 549 45325	Bead 67Ω at 100MHz.
1V50	2422 549 45325	Bead 67Ω at 100MHz.
1V51	2422 549 45325	Bead 67Ω at 100MHz.
1Y01	2422 025 17706	Connector 20p m
1Y20	2422 025 10771	Connector 10p m
1Y45	2422 025 10768	Connector 3p m
1Y81	2422 025 10772	Connector 12p m
1Y82	4822 267 10636	Conn 13p
1Y88	4822 265 11352	Connector 8p
8303	3104 311 03611	Cable 12p/280/12p
8305	3104 311 06201	Cable 8p/480/8p
8307	3104 311 06701	Cable 10P/480/10P
8308	3104 311 06521	Cable 13P/340/13P
8309	3104 311 00351	Coax cable for service
8311	8204 000 76372	Cable TW.p 13/280/DF19
8391	3122 358 76331	Tree assy M91-CP91



2002	4822 126 11669	27pF
2003	4822 126 13879	220nF +80-20% 16V
2004	4822 126 13879	220nF +80-20% 16V
2005	2238 586 59812	100nF 20% 50V 0603
2006	2238 586 59812	100nF 20% 50V 0603
2007	2238 586 59812	100nF 20% 50V 0603
2008	2238 586 59812	100nF 20% 50V 0603
2010	4822 126 11785	47pF 5% 50V 0603
2011	4822 126 11785	47pF 5% 50V 0603
2012	4822 126 11785	47pF 5% 50V 0603
2013	2020 021 91557	100μF 20% 16V
2016	2020 021 91557	100μF 20% 16V
2017	2238 586 59812	100nF 20% 50V 0603
2018	2222 867 15339	33pF 5% 50V 0603
2019	2238 586 59812	100nF 20% 50V 0603
2020	4822 126 13883	220pF 5% 50V
2022	2238 586 59812	100nF 20% 50V 0603
2023	2238 586 59812	100nF 20% 50V 0603
2024	2238 586 59812	100nF 20% 50V 0603
2025	2238 586 59812	100nF 20% 50V 0603
2026	2238 586 59812	100nF 20% 50V 0603
2027	2238 586 59812	100nF 20% 50V 0603
2028	2238 586 59812	100nF 20% 50V 0603
2029	2238 586 59812	100nF 20% 50V 0603
2031	2238 586 59812	100nF 20% 50V 0603
2033	4822 126 14226	82pF 5% 50V 0603
2034	4822 126 14226	82pF 5% 50V 0603
2035	4822 126 14226	82pF 5% 50V 0603
2036	4822 126 14226	82pF 5% 50V 0603
2037	4822 126 14226	82pF 5% 50V 0603
2038	2238 586 59812	100nF 20% 50V 0603
2039	2238 586 59812	100nF 20% 50V 0603
2040	2238 586 59812	100nF 20% 50V 0603
2063	3198 017 34730	47nF 16V 0603
2067	2238 586 59812	100nF 20% 50V 0603
2073	2238 586 59812	100nF 20% 50V 0603
2074	2238 586 59812	100nF 20% 50V 0603
2302	2238 586 59812	100nF 20% 50V 0603
2305	2238 586 59812	100nF 20% 50V 0603
2316	2238 586 59812	100nF 20% 50V 0603
2322	2238 586 59812	100nF 20% 50V 0603
2340	2020 021 91557	100μF 20% 16V
2350	2238 586 59812	100nF 20% 50V 0603
2351	2238 586 59812	100nF 20% 50V 0603
2352	2238 586 59812	100nF 20% 50V 0603
2356	2238 586 59812	100nF 20% 50V 0603
2357	2238 586 59812	100nF 20% 50V 0603
2358	5322 126 11579	3.3nF 10% 63V
2361	3198 016 31280	1.2pF 0.25pF 50V 0603
2362	4822 126 11663	12pF
2365	2238 586 59812	100nF 20% 50V 0603
2366	2238 586 59812	100nF 20% 50V 0603
2367	2238 586 59812	100nF 20% 50V 0603
2368	2238 586 59812	100nF 20% 50V 0603
2369	2238 586 59812	100nF 20% 50V 0603
2370	2238 586 59812	100nF 20% 50V 0603
2371	4822 126 13193	4.7nF 10% 63V
2372	2020 552 96448	1μF 10% 16V 0805
2373	2238 586 59812	100nF 20% 50V 0603
2374	4822 126 14491	2.2μF 10V 0805
2375	2238 916 15641	22nF 10% 25V 0603
2376	2238 586 59812	100nF 20% 50V 0603

2377	2020 021 91557	100µF 20% 16V	2797	2238 586 59812	100nF 20% 50V 0603	2A16	2238 586 59812	100nF 20% 50V 0603
2378	2238 586 59812	100nF 20% 50V 0603	2798	2238 586 59812	100nF 20% 50V 0603	2A17	2020 552 96618	1nF 10% 50V 0402
2384	2238 586 59812	100nF 20% 50V 0603	2799	2238 586 59812	100nF 20% 50V 0603	2A18	2020 021 91557	100µF 20% 16V
2387	4822 126 11785	47pF 5% 50V 0603	2800	2238 586 59812	100nF 20% 50V 0603	2A19	3198 017 41050	1µF 10V 0603
2390	2238 586 59812	100nF 20% 50V 0603	2801	2238 586 59812	100nF 20% 50V 0603	2A21	2238 586 59812	100nF 20% 50V 0603
2391	2238 586 59812	100nF 20% 50V 0603	2802	2238 586 59812	100nF 20% 50V 0603	2A22	2238 586 59812	100nF 20% 50V 0603
2394	4822 126 14491	2.2µF 10V 0805	2803	2238 586 59812	100nF 20% 50V 0603	2A23	2238 586 59812	100nF 20% 50V 0603
2401	5322 126 11583	10nF 10% 50V 0603	2804	2238 586 59812	100nF 20% 50V 0603	2A24	2020 552 96448	1µF 10% 16V 0805
2404	4822 126 14491	2.2µF 10V 0805	2805	2238 586 59812	100nF 20% 50V 0603	2A26	2238 586 59812	100nF 20% 50V 0603
2405	4822 126 13193	4.7nF 10% 63V	2806	2238 586 59812	100nF 20% 50V 0603	2A27	2020 552 96618	1nF 10% 50V 0402
2411	2238 586 59812	100nF 20% 50V 0603	2807	2238 586 59812	100nF 20% 50V 0603	2A29	2238 869 15101	100pF 5% 50V 0402
2412	4822 126 13193	4.7nF 10% 63V	2808	2020 021 91554	10µF 16V 20%	2A30	2238 869 15101	100pF 5% 50V 0402
2418	4822 126 11663	12pF	2809	2238 586 59812	100nF 20% 50V 0603	2A31	2238 586 59812	100nF 20% 50V 0603
2422	2238 586 59812	100nF 20% 50V 0603	2810	2238 586 59812	100nF 20% 50V 0603	2A32	2238 869 15101	100pF 5% 50V 0402
2425	2020 021 91557	100µF 20% 16V	2811	2238 586 59812	100nF 20% 50V 0603	2A33	2238 586 59812	100nF 20% 50V 0603
2432	2238 586 59812	100nF 20% 50V 0603	2812	2238 586 59812	100nF 20% 50V 0603	2A34	3198 035 71030	10nF 16V 0402
2433	2238 586 59812	100nF 20% 50V 0603	2813	2238 586 59812	100nF 20% 50V 0603	2A35	2020 552 96618	1nF 10% 50V 0402
2709	2238 586 59812	100nF 20% 50V 0603	2817	2238 586 59812	100nF 20% 50V 0603	2A36	2238 869 15101	100pF 5% 50V 0402
2710	2238 586 59812	100nF 20% 50V 0603	2819	2238 586 59812	100nF 20% 50V 0603	2A37	2238 869 15101	100pF 5% 50V 0402
2711	2238 586 59812	100nF 20% 50V 0603	2820	2238 586 59812	100nF 20% 50V 0603	2A38	3198 035 71030	10nF 16V 0402
2712	2238 586 59812	100nF 20% 50V 0603	2821	2238 586 59812	100nF 20% 50V 0603	2A40	2238 586 59812	100nF 20% 50V 0603
2713	4822 122 33761	22pF 5% 50V	2822	2238 586 59812	100nF 20% 50V 0603	2A41	2020 021 91554	10µF 16V 20%
2714	4822 122 33761	22pF 5% 50V	2823	5322 126 11578	1nF 10% 50V 0603	2A42	2020 021 91554	10µF 16V 20%
2715	2238 586 59812	100nF 20% 50V 0603	2824	5322 126 11578	1nF 10% 50V 0603	2A43	2020 021 91554	10µF 16V 20%
2716	2238 586 59812	100nF 20% 50V 0603	2825	2238 586 59812	100nF 20% 50V 0603	2A44	2238 586 59812	100nF 20% 50V 0603
2718	4822 122 33752	15pF 5% 50V	2826	2238 586 59812	100nF 20% 50V 0603	2A46	2020 552 96448	1µF 10% 16V 0805
2719	4822 122 33752	15pF 5% 50V	2829	2238 586 59812	100nF 20% 50V 0603	2A47	2020 552 96618	1nF 10% 50V 0402
2720	4822 122 33752	15pF 5% 50V	2831	4822 126 14221	68pF 5% 50V 0603 NPO	2A48	2020 552 96618	1nF 10% 50V 0402
2721	2020 552 94427	100pF 5% 50V	2832	2238 586 59812	100nF 20% 50V 0603	2A49	2020 552 96448	1µF 10% 16V 0805
2722	2020 552 94427	100pF 5% 50V	2833	2238 586 59812	100nF 20% 50V 0603	2A50	2020 552 96618	1nF 10% 50V 0402
2723	3198 016 31020	1nF 25V 0603	2834	2238 586 59812	100nF 20% 50V 0603	2A51	2020 552 96618	1nF 10% 50V 0402
2724	2238 586 59812	100nF 20% 50V 0603	2835	2238 586 59812	100nF 20% 50V 0603	2A52	2020 552 96618	1nF 10% 50V 0402
2728	2020 021 91554	10µF 16V 20%	2836	2238 586 59812	100nF 20% 50V 0603	2A54	2020 552 96618	1nF 10% 50V 0402
2729	2238 586 59812	100nF 20% 50V 0603	2837	2238 586 59812	100nF 20% 50V 0603	2A57	2020 552 96618	1nF 10% 50V 0402
2730	2020 021 91557	100µF 20% 16V	2838	2238 586 59812	100nF 20% 50V 0603	2A60	2020 552 96618	1nF 10% 50V 0402
2731	2238 586 59812	100nF 20% 50V 0603	2842	2238 586 59812	100nF 20% 50V 0603	2A65	2020 552 96618	1nF 10% 50V 0402
2732	2238 586 59812	100nF 20% 50V 0603	2843	2238 586 59812	100nF 20% 50V 0603	2A67	2020 552 96448	1µF 10% 16V 0805
2733	2238 586 59812	100nF 20% 50V 0603	2844	2238 586 59812	100nF 20% 50V 0603	2A68	2020 552 96618	1nF 10% 50V 0402
2734	2238 586 59812	100nF 20% 50V 0603	2845	2238 586 59812	100nF 20% 50V 0603	2A71	2020 552 96448	1µF 10% 16V 0805
2735	2238 586 59812	100nF 20% 50V 0603	2846	2238 586 59812	100nF 20% 50V 0603	2A73	2020 552 96618	1nF 10% 50V 0402
2740	2238 916 15641	22nF 10% 25V 0603	2847	2238 586 59812	100nF 20% 50V 0603	2A77	2020 552 96618	1nF 10% 50V 0402
2741	2238 916 15641	22nF 10% 25V 0603	2848	2238 586 59812	100nF 20% 50V 0603	2A79	2238 586 59812	100nF 20% 50V 0603
2742	2238 916 15641	10µF 10% 25V 0603	2851	2238 586 59812	100nF 20% 50V 0603	2A82	3198 017 34730	47nF 16V 0603
2743	2238 586 59812	100nF 20% 50V 0603	2852	2238 586 59812	100nF 20% 50V 0603	2A91	2020 552 96448	1µF 10% 16V 0805
2744	2238 586 59812	100nF 20% 50V 0603	2853	2238 586 59812	100nF 20% 50V 0603	2A92	2020 552 96448	1µF 10% 16V 0805
2745	2238 586 59812	100nF 20% 50V 0603	2854	2238 586 59812	100nF 20% 50V 0603	2A95	4822 126 13883	220pF 5% 50V
2746	2238 586 59812	100nF 20% 50V 0603	2855	2238 586 59812	100nF 20% 50V 0603	2A99	2238 869 15101	100pF 5% 50V 0402
2747	2238 586 59812	100nF 20% 50V 0603	2857	2238 586 59812	100nF 20% 50V 0603	2AA0	2238 869 15101	100pF 5% 50V 0402
2748	2238 586 59812	100nF 20% 50V 0603	2858	4822 124 12095	100µF 20% 16V	2AA1	2238 869 15101	100pF 5% 50V 0402
2749	2020 021 91554	10µF 16V 20%	2859	2238 586 59812	100nF 20% 50V 0603	2AA5	2238 869 15101	100pF 5% 50V 0402
2750	2238 586 59812	100nF 20% 50V 0603	2860	2238 586 59812	100nF 20% 50V 0603	2AA6	2020 552 96618	1nF 10% 50V 0402
2751	2238 586 59812	100nF 20% 50V 0603	2861	2238 586 59812	100nF 20% 50V 0603	2AA7	2020 552 96618	1nF 10% 50V 0402
2752	2238 586 59812	100nF 20% 50V 0603	2862	2238 586 59812	100nF 20% 50V 0603	2AA8	2020 552 96618	1nF 10% 50V 0402
2753	2238 586 59812	100nF 20% 50V 0603	2863	2238 586 59812	100nF 20% 50V 0603	2AA9	3198 016 35680	5.6pF 0.5pF 50V 0603
2754	2238 586 59812	100nF 20% 50V 0603	2864	2238 586 59812	100nF 20% 50V 0603	2AB0	3198 016 35680	5.6pF 0.5pF 50V 0603
2755	2238 586 59812	100nF 20% 50V 0603	2865	2238 586 59812	100nF 20% 50V 0603	2AB2	2020 552 96618	1nF 10% 50V 0402
2756	2238 586 59812	100nF 20% 50V 0603	2866	2238 586 59812	100nF 20% 50V 0603	2AB3	2020 552 96448	1µF 10% 16V 0805
2757	2238 916 15641	22nF 10% 25V 0603	2867	2238 586 59812	100nF 20% 50V 0603	2AB4	2020 552 96448	1µF 10% 16V 0805
2760	2238 586 59812	100nF 20% 50V 0603	2870	2020 021 91554	10µF 16V 20%	2AB5	2020 021 91554	10µF 16V 20%
2761	2238 586 59812	100nF 20% 50V 0603	2871	2020 021 91557	100µF 20% 16V	2AB8	2020 552 96448	1µF 10% 16V 0805
2762	2238 586 59812	100nF 20% 50V 0603	2872	2238 586 59812	100nF 20% 50V 0603	2AF3	2020 021 91557	100µF 20% 16V
2763	2238 586 59812	100nF 20% 50V 0603	2874	2020 021 91554	10µF 16V 20%	2AF4	2238 586 59812	100nF 20% 50V 0603
2764	2238 586 59812	100nF 20% 50V 0603	2877	2020 021 91557	100µF 20% 16V	2AO1	2238 586 59812	100nF 20% 50V 0603
2765	2238 586 59812	100nF 20% 50V 0603	2880	2020 021 91554	10µF 16V 20%	2AO2	2238 586 59812	100nF 20% 50V 0603
2766	2238 586 59812	100nF 20% 50V 0603	2881	4822 126 11669	27pF	2AO3	2238 586 59812	100nF 20% 50V 0603
2767	2238 586 59812	100nF 20% 50V 0603	2884	2238 586 59812	100nF 20% 50V 0603	2AO4	2238 586 59812	100nF 20% 50V 0603
2768	2238 586 59812	100nF 20% 50V 0603	2886	2238 586 59812	100nF 20% 50V 0603	2AO5	2238 586 59812	100nF 20% 50V 0603
2769	2238 586 59812	100nF 20% 50V 0603	2887	2238 586 59812	100nF 20% 50V 0603	2AO6	4822 126 11669	27pF
2770	2020 021 91554	10µF 16V 20%	2888	2238 586 59812	100nF 20% 50V 0603	2AO7	4822 124 12095	100µF 20% 16V
2771	2238 586 59812	100nF 20% 50V 0603	2889	2238 586 59812	100nF 20% 50V 0603	2AO8	4822 124 12095	100µF 20% 16V
2772	2020 021 91557	100µF 20% 16V	2890	2238 586 59812	100nF 20% 50V 0603	2B00	4822 126 11669	27pF
2773	2238 586 59812	100nF 20% 50V 0603	2891	2238 586 59812	100nF 20% 50V 0603	2B01	2020 552 96448	1µF 10% 16V 0805
2774	2238 586 59812	100nF 20% 50V 0603	2892	2238 586 59812	100nF 20% 50V 0603	2B02	4822 126 11669	27pF
2775	2238 586 59812	100nF 20% 50V 0603	2893	2238 586 59812	100nF 20% 50V 0603	2B03	2020 552 96448	1µF 10% 16V 0805
2776	2238 586 59812	100nF 20% 50V 0603	2894	2238 586 59812	100nF 20% 50V 0603	2B04	2020 552 96448	1µF 10% 16V 0805
2777	2238 586 59812	100nF 20% 50V 0603	2895	2238 586 59812	100nF 20% 50V 0603	2B05	4822 126 11669	27pF
2778	2238 586 59812	100nF 20% 50V 0603	2896	2238 586 59812	100nF 20% 50V 0603	2B06	3198 035 71040	100nF 10% 16V 0402
2779	2238 586 59812	100nF 20% 50V 0603	2897	2238 586 59812	100nF 20% 50V 0603	2B07	3198 035 71040	100nF 10% 16V 0402
2780	2238 586 59812	100nF 20% 50V 0603	2898	2238 586 59812	100nF 20% 50V 0603	2B08	3198 035 71040	100nF 10% 16V 0402
2781	2238 586 59812	100nF 20% 50V 0603	2899	2238 586 59812	100nF 20% 50V 0603	2B09	3198 035 71040	100nF 10% 16V 0402
2782	2238 586 59812	10						

2B24	3198 035 71040	100nF 10% 16V 0402	2E65	2238 586 59812	100nF 20% 50V 0603	2IC9	4822 126 13881	470pF 5% 50V
2B25	4822 122 33761	22pF 5% 50V	2E66	2238 586 59812	100nF 20% 50V 0603	2IH3	3198 016 31020	1nF 25V 0603
2B26	4822 122 33761	22pF 5% 50V	2E67	2238 586 59812	100nF 20% 50V 0603	2IH4	2020 552 96448	1μF 10% 16V 0805
2B27	3198 035 71040	100nF 10% 16V 0402	2E68	2022 552 05616	4.7μF 5% 6.3V	2L01	3198 035 71040	100nF 10% 16V 0402
2B28	3198 035 71040	100nF 10% 16V 0402	2E69	2238 586 59812	100nF 20% 50V 0603	2L02	3198 035 71040	100nF 10% 16V 0402
2B29	3198 035 71040	100nF 10% 16V 0402	2E70	2238 586 59812	100nF 20% 50V 0603	2L03	3198 035 71040	100nF 10% 16V 0402
2B30	3198 035 71040	100nF 10% 16V 0402	2E72	2238 586 59812	100nF 20% 50V 0603	2L04	3198 035 71040	100nF 10% 16V 0402
2B31	2020 021 91554	10μF 16V 20%	2E73	2238 586 59812	100nF 20% 50V 0603	2L05	3198 035 71040	100nF 10% 16V 0402
2B32	3198 035 71040	100nF 10% 16V 0402	2E74	2238 586 59812	100nF 20% 50V 0603	2L06	3198 035 71040	100nF 10% 16V 0402
2B33	2020 021 91557	100μF 20% 16V	2E75	2238 586 59812	100nF 20% 50V 0603	2L07	3198 035 71040	100nF 10% 16V 0402
2B34	4822 126 14549	33nF 16V 0603	2E76	2238 586 59812	100nF 20% 50V 0603	2L08	3198 035 71040	100nF 10% 16V 0402
2B35	4822 124 81059	220μF 20% 4V	2E78	2238 586 59812	100nF 20% 50V 0603	2L09	3198 035 71040	100nF 10% 16V 0402
2B36	4822 126 13879	220nF +80-20% 16V	2E79	2238 586 59812	100nF 20% 50V 0603	2L10	3198 035 71040	100nF 10% 16V 0402
2B37	5322 126 11583	10nF 10% 50V 0603	2E80	2238 586 59812	100nF 20% 50V 0603	2L11	2238 586 59812	100nF 20% 50V 0603
2B40	2238 869 15189	18pF 5% 50V 0402	2E81	2022 552 05616	4.7μF 5% 6.3V	2L12	3198 035 71040	100nF 10% 16V 0402
2B45	4822 122 33741	10pF 10% 50V	2E82	2238 586 59812	100nF 20% 50V 0603	2L13	3198 035 71040	100nF 10% 16V 0402
2B51	4822 122 33741	10pF 10% 50V	2E83	2238 586 59812	100nF 20% 50V 0603	2L14	3198 035 71040	100nF 10% 16V 0402
2B52	2020 552 96628	10nF 10% 16V 0402	2E84	2238 586 59812	100nF 20% 50V 0603	2L15	3198 035 71040	100nF 10% 16V 0402
2B53	2020 552 96628	10nF 10% 16V 0402	2E86	2238 586 59812	100nF 20% 50V 0603	2L16	3198 035 71040	100nF 10% 16V 0402
2B54	4822 124 81059	220μF 20% 4V	2E87	4822 124 12095	100μF 20% 16V	2L17	3198 035 71040	100nF 10% 16V 0402
2B55	2238 586 59812	100nF 20% 50V 0603	2I00	2238 586 59812	100nF 20% 50V 0603	2L18	2020 552 96305	4.7μF 20-80% 10V
2B56	4822 124 81059	220μF 20% 4V	2I07	4822 051 30008	Jumper 0603	2L19	4822 124 23002	10μF 16V
2B57	4822 124 81059	220μF 20% 4V	2I09	2020 552 94427	100pF 5% 50V	2L20	3198 035 71040	100nF 10% 16V 0402
2C00	2238 586 59812	100nF 20% 50V 0603	2I10	2020 552 94427	100pF 5% 50V	2L21	3198 035 71040	100nF 10% 16V 0402
2C01	2238 586 59812	100nF 20% 50V 0603	2I11	2020 552 94427	100pF 5% 50V	2L22	3198 017 34730	47nF 16V 0603
2C02	2238 586 59812	100nF 20% 50V 0603	2I13	4822 126 14241	330pF 0603 50V	2L23	3198 017 34730	47nF 16V 0603
2D03	2020 552 96618	1nF 10% 50V 0402	2I14	2020 552 94427	100pF 5% 50V	2L24	3198 017 34730	47nF 16V 0603
2D04	2020 552 96618	1nF 10% 50V 0402	2I16	2020 552 94427	100pF 5% 50V	2L25	2238 586 59812	100nF 20% 50V 0603
2D08	2238 586 59812	100nF 20% 50V 0603	2I17	2020 552 94427	100pF 5% 50V	2L26	3198 017 34730	47nF 16V 0603
2D16	2238 586 59812	100nF 20% 50V 0603	2I18	2020 552 94427	100pF 5% 50V	2L27	4822 126 13193	4.7nF 10% 63V
2D17	2238 586 59812	100nF 20% 50V 0603	2I19	2020 552 94427	100pF 5% 50V	2L28	4822 126 14226	82pF 5% 50V 0603
2D21	2238 586 59812	100nF 20% 50V 0603	2I20	2020 552 94427	100pF 5% 50V	2L29	4822 122 33761	22pF 5% 50V
2D22	2238 586 59812	100nF 20% 50V 0603	2I21	4822 126 14585	100nF 10% 0805 50V	2L30	4822 126 14226	82pF 5% 50V 0603
2D51	2238 586 59812	100nF 20% 50V 0603	2I23	2020 552 94427	100pF 5% 50V	2L31	4822 126 14549	33nF 16V 0603
2D52	2238 586 59812	100nF 20% 50V 0603	2I24	2020 552 94427	100pF 5% 50V	2L32	5322 126 11579	3.3nF 10% 63V
2D53	2022 552 05616	4.7μF 5% 6.3V	2I26	2020 552 94427	100pF 5% 50V	2L33	2238 586 59812	100nF 20% 50V 0603
2D54	2022 552 05616	4.7μF 5% 6.3V	2I27	2020 552 94427	100pF 5% 50V	2L34	2238 586 59812	100nF 20% 50V 0603
2D55	2022 552 05616	4.7μF 5% 6.3V	2I28	2020 552 96628	10nF 10% 16V 0402	2L35	4822 126 13879	220nF +80-20% 16V
2D57	2238 586 59812	100nF 20% 50V 0603	2I31	5322 126 11583	10nF 10% 50V 0603	2L36	3198 016 31020	1nF 25V 0603
2D58	2022 552 05616	4.7μF 5% 6.3V	2I32	5322 126 11583	10nF 10% 50V 0603	2L37	3198 016 31020	1nF 25V 0603
2D59	2022 552 05616	4.7μF 5% 6.3V	2I36	2020 552 94427	100pF 5% 50V	2L38	3198 016 31020	1nF 25V 0603
2D60	2022 552 05616	4.7μF 5% 6.3V	2I39	3198 024 44730	47nF 50V 0603	2L39	2238 586 59812	100nF 20% 50V 0603
2D61	2022 552 05616	4.7μF 5% 6.3V	2I46	3198 016 31020	1nF 25V 0603	2L40	2020 552 96305	4.7μF 20-80% 10V
2D62	4822 126 13879	220nF +80-20% 16V	2I47	3198 016 31020	1nF 25V 0603	2L41	3198 016 31020	1nF 25V 0603
2D63	2022 552 05616	4.7μF 5% 6.3V	2I48	2238 587 15624	1.2nF 10% 50V 0402	2L42	3198 016 31020	1nF 25V 0603
2D64	2022 552 05616	4.7μF 5% 6.3V	2I51	2238 586 59812	100nF 20% 50V 0603	2L43	2238 586 59812	100nF 20% 50V 0603
2D65	3198 032 47170	47μF 20% 16V	2I52	2020 552 94427	100pF 5% 50V	2L44	2020 552 96305	4.7μF 20-80% 10V
2D68	4822 126 13879	220nF +80-20% 16V	2I54	2238 869 15101	100pF 5% 50V 0402	2L45	3198 016 31020	1nF 25V 0603
2D70	2238 586 59812	100nF 20% 50V 0603	2I55	2238 586 59812	100nF 20% 50V 0603	2L46	3198 016 31020	1nF 25V 0603
2D71	2238 586 59812	100nF 20% 50V 0603	2I57	2020 552 94427	100pF 5% 50V	2L47	2238 586 59812	100nF 20% 50V 0603
2D74	4822 124 12095	100μF 20% 16V	2I58	2020 552 94427	100pF 5% 50V	2L48	4822 122 33752	15pF 5% 50V
2D75	2238 586 59812	100nF 20% 50V 0603	2I59	2238 586 59812	100nF 20% 50V 0603	2L50	4822 122 33752	15pF 5% 50V
2D76	2022 552 05616	4.7μF 5% 6.3V	2I60	2238 587 15624	1.2nF 10% 50V 0402	2L53	4822 124 81059	220μF 20% 4V
2D77	2238 586 59812	100nF 20% 50V 0603	2I62	2238 869 15101	100pF 5% 50V 0402	2L57	5322 126 11583	10nF 10% 50V 0603
2D78	2238 586 59812	100nF 20% 50V 0603	2I64	2238 869 15101	100pF 5% 50V 0402	2L58	4822 124 81059	220μF 20% 4V
2E02	4822 124 23237	22μF 6.3V	2I65	2238 869 15101	100pF 5% 50V 0402	2L59	2020 552 96618	1nF 10% 50V 0402
2E04	3198 035 04710	470pF 50V 0402	2I66	2238 869 15101	100pF 5% 50V 0402	2L60	4822 126 11785	47pF 5% 50V 0603
2E05	4822 124 23237	22μF 6.3V	2I67	2238 869 15101	100pF 5% 50V 0402	2L61	5322 126 11583	10nF 10% 50V 0603
2E09	4822 124 23237	22μF 6.3V	2I69	2238 869 15101	100pF 5% 50V 0402	2L62	5322 126 11583	10nF 10% 50V 0603
2E10	2238 586 59812	100nF 20% 50V 0603	2I70	2238 869 15101	100pF 5% 50V 0402	2L63	4822 126 11785	47pF 5% 50V 0603
2E11	4822 124 23237	22μF 6.3V	2I71	2020 552 96448	1μF 10% 16V 0805	2P80	4822 124 12095	100μF 20% 16V
2E12	2238 586 59812	100nF 20% 50V 0603	2I72	2020 552 96448	1μF 10% 16V 0805	2P81	2238 586 59812	100nF 20% 50V 0603
2E14	2238 586 59812	100nF 20% 50V 0603	2I73	2020 552 96448	1μF 10% 16V 0805	2S02	2238 586 59812	100nF 20% 50V 0603
2E15	2238 586 59812	100nF 20% 50V 0603	2I74	2020 552 96448	1μF 10% 16V 0805	2S03	2238 586 59812	100nF 20% 50V 0603
2E17	2238 586 59812	100nF 20% 50V 0603	2I75	2020 552 96448	1μF 10% 16V 0805	2S04	2238 586 59812	100nF 20% 50V 0603
2E18	2022 552 05616	4.7μF 5% 6.3V	2I76	2020 552 96448	1μF 10% 16V 0805	2S05	2238 586 59812	100nF 20% 50V 0603
2E19	2238 586 59812	100nF 20% 50V 0603	2I77	2020 552 96448	1μF 10% 16V 0805	2S06	2020 552 94427	100pF 5% 50V
2E20	2238 586 59812	100nF 20% 50V 0603	2I78	2020 552 96448	1μF 10% 16V 0805	2S07	2020 552 94427	100pF 5% 50V
2E21	2238 586 59812	100nF 20% 50V 0603	2I79	2020 021 91886	22μF 20% 16V	2S08	2020 552 94427	100pF 5% 50V
2E22	2020 552 96448	1μF 10% 16V 0805	2I80	2020 552 96448	1μF 10% 16V 0805	2S09	2020 552 94427	100pF 5% 50V
2E23	2238 586 59812	100nF 20% 50V 0603	2I81	2020 552 96448	1μF 10% 16V 0805	2S11	2020 552 94427	100pF 5% 50V
2E24	2238 586 59812	100nF 20% 50V 0603	2I82	2020 552 96448	1μF 10% 16V 0805	2S13	2020 552 94427	100pF 5% 50V
2E25	2238 586 59812	100nF 20% 50V 0603	2I83	2020 552 96448	1μF 10% 16V 0805	2S14	2020 552 94427	100pF 5% 50V
2E26	2238 586 59812	100nF 20% 50V 0603	2I84	2020 552 96448	1μF 10% 16V 0805	2S15	2020 552 94427	100pF 5% 50V
2E28	2238 586 59812	100nF 20% 50V 0603	2I85	2020 552 96448	1μF 10% 16V 0805	2S16	2020 552 94427	100pF 5% 50V
2E30	2022 552 05616	4.7μF 5% 6.3V	2I98	2238 869 15101	100pF 5% 50V 0402	2S22	3198 017 44740	470nF 10V 0603
2E35	2238 586 59812	100nF 20% 50V 0603	2I A0	2020 552 96448	1μF 10% 16V 0805	2S42	4822 051 30759	75Ω 5% 0.062W
2E37	4822 124 23237	22μF 6.3V	2I A1	2020 552 96448	1μF 10% 16V 0805	2S47	3198 016 31020	1nF 25V 0603
2E39	2022 552 05616	4.7μF 5% 6.3V	2I A4	2020 552 96448	1μF 10% 16V 0805	2T04	3198 024 44730	47nF 50V 0603
2E41	4822 124 80151	47μF 16V	2I A5	2020 021 91557	100μF 20% 16V	2T05	2020 021 91887	470μF 20% 16V
2E43	4822 124 80151	47μF 16V	2I A9	2020 021 91557	100μF 20% 16V	2T06	5322 126 11583	10nF 10% 50V 0603
2E45	4822 124 80151	47μF 16V	2I B0	2020 552 96448	1μF 10% 16V 0805	2T09		

2V06	2238 586 59812	100nF 20% 50V 0603	3049	3198 031 11010	4 x 100Ω 5% 1206	3713	4822 051 30181	180Ω 5% 0.062W
2V07	2238 586 59812	100nF 20% 50V 0603	3050	3198 031 11010	4 x 100Ω 5% 1206	3714	4822 051 30181	180Ω 5% 0.062W
2V08	2238 586 59812	100nF 20% 50V 0603	3051	3198 031 11010	4 x 100Ω 5% 1206	3715	4822 051 30181	180Ω 5% 0.062W
2V09	2238 586 59812	100nF 20% 50V 0603	3052	3198 031 11010	4 x 100Ω 5% 1206	3716	4822 117 13632	100kΩ 1% 0603 0.62W
2V10	2238 586 59812	100nF 20% 50V 0603	3053	4822 051 30103	10kΩ 5% 0.062W	3717	4822 117 13632	100kΩ 1% 0603 0.62W
2V11	2238 586 59812	100nF 20% 50V 0603	3054	3198 031 11010	4 x 100Ω 5% 1206	3718	4822 117 13632	100kΩ 1% 0603 0.62W
2V12	2238 586 59812	100nF 20% 50V 0603	3055	3198 031 11010	4 x 100Ω 5% 1206	3719	4822 051 30332	3.3Ω 5% 0.062W
2V13	2238 586 59812	100nF 20% 50V 0603	3056	3198 031 11010	4 x 100Ω 5% 1206	3720	4822 051 30103	10kΩ 5% 0.062W
2V24	5322 124 41945	22μF 20% 35V	3057	3198 031 11010	4 x 100Ω 5% 1206	3721	4822 117 13545	100Ω 1% 0402
2V25	2238 586 59812	100nF 20% 50V 0603	3059	2120 108 93902	620Ω 1% 0603	3722	4822 051 30109	10Ω 5% 0.062W
2V26	2238 586 59812	100nF 20% 50V 0603	3061	3198 031 11010	4 x 100Ω 5% 1206	3723	4822 051 30472	4.7Ω 5% 0.062W
2V27	2238 586 59812	100nF 20% 50V 0603	3062	4822 051 30103	10kΩ 5% 0.062W	3725	4822 051 30332	3.3Ω 5% 0.062W
2V28	2238 586 59812	100nF 20% 50V 0603	3064	3198 031 11010	4 x 100Ω 5% 1206	3726	4822 117 11817	1.2kΩ 1% 0.0625W
2V29	2238 586 59812	100nF 20% 50V 0603	3065	4822 051 30472	4.7Ω 5% 0.062W	3727	4822 051 30151	150Ω 5% 0.062W
2V31	2020 552 96305	4.7μF 20-80% 10V	3066	4822 117 12925	47kΩ 1% 0.063W 0603	3728	4822 051 30151	150Ω 5% 0.062W
2V32	2238 586 59812	100nF 20% 50V 0603	3067	4822 051 30474	470kΩ 5% 0.062W	3729	4822 117 13545	100Ω 1% 0402
2V33	2238 586 59812	100nF 20% 50V 0603	3069	4822 051 30222	2.2kΩ 5% 0.062W	3730	3198 031 06810	680Ω 5% 0.01W 0402
2V34	2238 586 59812	100nF 20% 50V 0603	3072	3198 031 11010	4 x 100Ω 5% 1206	3736	4822 051 30101	100Ω 5% 0.062W
2V35	2238 586 59812	100nF 20% 50V 0603	3073	3198 031 14710	4 x 470Ω 5% 1206	3737	4822 051 30102	1kΩ 5% 0.062W
2V37	2020 552 96305	4.7μF 20-80% 10V	3074	3198 031 14710	4 x 470Ω 5% 1206	3738	4822 051 30102	1kΩ 5% 0.062W
2V38	2238 586 59812	100nF 20% 50V 0603	3076	3198 031 14710	4 x 470Ω 5% 1206	3739	3198 031 01530	15kΩ 5% 0.01W 0402
2V40	2020 552 96305	4.7μF 20-80% 10V	3077	4822 051 30103	10kΩ 5% 0.062W	3740	4822 051 30102	1kΩ 5% 0.062W
2V41	2020 552 96305	4.7μF 20-80% 10V	3078	3198 031 14710	4 x 470Ω 5% 1206	3741	4822 051 30223	22kΩ 5% 0.062W
2V43	2238 586 59812	100nF 20% 50V 0603	3079	4822 051 30222	2.2kΩ 5% 0.062W	3743	4822 051 30153	15kΩ 5% 0.062W
2V44	2238 586 59812	100nF 20% 50V 0603	3080	4822 051 30472	4.7Ω 5% 0.062W	3744	4822 051 30222	2.2kΩ 5% 0.062W
2V45	2238 586 59812	100nF 20% 50V 0603	3081	4822 051 30471	47Ω 5% 0.062W	3745	4822 051 30102	1kΩ 5% 0.062W
2V47	2020 552 96305	4.7μF 20-80% 10V	3082	3198 031 11010	4 x 100Ω 5% 1206	3746	5322 117 13042	3.9kΩ 1% 0.063W 0603
2V48	2238 586 59812	100nF 20% 50V 0603	3083	3198 031 11010	4 x 100Ω 5% 1206	3747	4822 051 30154	150kΩ 5% 0.062W
2V50	2020 552 96305	4.7μF 20-80% 10V	3084	4822 051 30103	10kΩ 5% 0.062W	3748	4822 117 12891	220kΩ 1%
2V51	2238 586 59812	100nF 20% 50V 0603	3085	3198 031 11010	4 x 100Ω 5% 1206	3749	5322 117 13042	3.9kΩ 1% 0.063W 0603
2V52	2238 586 59812	100nF 20% 50V 0603	3086	3198 031 11010	4 x 100Ω 5% 1206	3750	4822 051 30392	3.9Ω 5% 0.063W 0603
2V54	2020 552 96305	4.7μF 20-80% 10V	3087	4822 051 30101	100Ω 5% 0.062W	3751	4822 051 30472	4.7Ω 5% 0.062W
2V55	2238 586 59812	100nF 20% 50V 0603	3088	4822 051 30222	2.2kΩ 5% 0.062W	3752	4822 117 12917	1Ω 5% 0.062W
2V56	2022 552 05616	4.7μF 5% 6.3V	3089	4822 051 30101	100Ω 5% 0.062W	3753	4822 117 12917	1Ω 5% 0.062W
2V57	2022 552 05616	4.7μF 5% 6.3V	3090	3198 031 14710	4 x 470Ω 5% 1206	3754	4822 051 30101	100Ω 5% 0.062W
2V58	2020 552 94427	100pF 5% 50V	3091	4822 051 30008	Jumper 0603	3755	4822 051 30472	4.7Ω 5% 0.062W
2V59	2020 552 94427	100pF 5% 50V	3092	4822 051 30222	2.2kΩ 5% 0.062W	3756	5322 117 13056	8.2kΩ 1% 0.063W 0603
2V60	4822 126 14226	82pF 5% 50V 0603	3093	4822 051 30103	10kΩ 5% 0.062W	3758	4822 051 30472	4.7Ω 5% 0.062W
2V61	4822 126 14226	82pF 5% 50V 0603	3097	4822 051 30471	47Ω 5% 0.062W	3759	4822 051 30221	220Ω 5% 0.062W
2V65	2020 552 96305	4.7μF 20-80% 10V	3099	3198 031 14710	4 x 470Ω 5% 1206	3762	4822 051 30101	100Ω 5% 0.062W
2V67	2238 586 59812	100nF 20% 50V 0603	3100	4822 051 30221	220Ω 5% 0.062W	3764	4822 051 30109	10Ω 5% 0.062W
2V68	2238 586 59812	100nF 20% 50V 0603	3101	4822 051 30221	220Ω 5% 0.062W	3770	4822 117 13545	100Ω 1% 0402
2V69	2238 586 59812	100nF 20% 50V 0603	3102	3198 031 11010	4 x 100Ω 5% 1206	3771	4822 117 12971	15Ω 5% 0603 0.62W
2V71	2020 552 96305	4.7μF 20-80% 10V	3304	2322 750 63908	3.9Ω 5% Fuse 1206	3772	4822 117 12971	15Ω 5% 0603 0.62W
2V72	2238 586 59812	100nF 20% 50V 0603	3308	4822 051 20154	150kΩ 5% 0.1W	3773	4822 117 12925	47kΩ 1% 0.063W 0603
2V73	2238 586 59812	100nF 20% 50V 0603	3368	4822 051 30471	47Ω 5% 0.062W	3774	4822 117 12925	47kΩ 1% 0.063W 0603
2V74	2238 586 59812	100nF 20% 50V 0603	3370	4822 051 30101	100Ω 5% 0.062W	3781	4822 117 12925	47kΩ 1% 0.063W 0603
2V75	2238 586 59812	100nF 20% 50V 0603	3371	4822 051 30479	47Ω 5% 0.062W	3782	4822 117 12925	47kΩ 1% 0.063W 0603
2V78	2238 586 59812	100nF 20% 50V 0603	3372	4822 051 30471	47Ω 5% 0.062W	3783	4822 117 12925	47kΩ 1% 0.063W 0603
2V79	4822 126 14226	82pF 5% 50V 0603	3373	4822 051 30008	Jumper 0603	3792	4822 051 30102	1kΩ 5% 0.062W
2Y00	2238 869 15101	100pF 5% 50V 0402	3374	4822 051 30008	Jumper 0603	3793	4822 051 30222	2.2kΩ 5% 0.062W
2Y01	2020 552 96618	1nF 10% 50V 0402	3375	4822 051 30008	Jumper 0603	3794	4822 051 30109	10Ω 5% 0.062W
			3376	4822 051 30101	100Ω 5% 0.062W	3795	4822 051 30109	10Ω 5% 0.062W
			3377	4822 051 30101	100Ω 5% 0.062W	3796	4822 051 30101	100Ω 5% 0.062W
			3378	4822 051 30153	15kΩ 5% 0.062W	3797	4822 051 30101	100Ω 5% 0.062W
			3379	4822 051 30008	Jumper 0603	3798	4822 051 30472	4.7Ω 5% 0.062W
			3381	4822 051 30008	Jumper 0603	3800	2322 704 61501	150Ω 1% 0603
			3382	3198 031 03910	390Ω 1% 0402	3802	2322 704 61501	150Ω 1% 0603
			3385	4822 051 30471	47Ω 5% 0.062W	3803	2322 704 61501	150Ω 1% 0603
			3393	4822 117 13632	100kΩ 1% 0603 0.62W	3804	4822 051 30102	1kΩ 5% 0.062W
			3400	4822 117 11152	4.7Ω 5%	3811	4822 051 30759	75Ω 5% 0.062W
			3401	4822 117 13632	100kΩ 1% 0603 0.62W	3812	4822 051 30759	75Ω 5% 0.062W
			3402	2322 750 63908	3.9Ω 5% Fuse 1206	3814	4822 051 30759	75Ω 5% 0.062W
			3403	4822 051 30008	Jumper 0603	3815	4822 051 30759	75Ω 5% 0.062W
			3405	4822 051 30102	1kΩ 5% 0.062W	3817	4822 051 30759	75Ω 5% 0.062W
			3408	4822 051 30101	100Ω 5% 0.062W	3818	4822 051 30759	75Ω 5% 0.062W
			3415	5322 117 13056	8.2kΩ 1% 0.063W 0603	3819	4822 051 30759	75Ω 5% 0.062W
			3418	4822 051 30391	390Ω 5% 0.062W	3820	4822 051 30759	75Ω 5% 0.062W
			3419	4822 051 30391	390Ω 5% 0.062W	3821	4822 051 30759	75Ω 5% 0.062W
			3420	4822 051 30102	1kΩ 5% 0.062W	3822	4822 051 30759	75Ω 5% 0.062W
			3436	4822 051 30271	270Ω 5% 0.062W	3823	4822 051 30759	75Ω 5% 0.062W
			3437	4822 051 30102	1kΩ 5% 0.062W	3824	4822 051 30759	75Ω 5% 0.062W
			3439	4822 117 11817	1.2kΩ 1% 0.0625W	3825	2322 704 61501	150Ω 1% 0603
			3441	4822 051 30223	22kΩ 5% 0.062W	3826	2322 704 61501	150Ω 1% 0603
			3456	4822 051 30472	4.7Ω 5% 0.062W	3827	2322 704 61501	150Ω 1% 0603
			3457	4822 051 30472	4.7Ω 5% 0.062W	3828	4822 051 30339	33Ω 5% 0.062W
			3463	4822 051 30183	18kΩ 5% 0.062W	3829	4822 117 12971	15Ω 5% 0603 0.62W
			3473	4822 051 30102	1kΩ 5% 0.062W	3831	4822 117 13545	100Ω 1% 0402
			3474	4822 051 30109	10Ω 5% 0.062W	3832	4822 117 13545	100Ω 1% 0402
			3475	5322 117 11726	10Ω 5%	3833	4822 117 13545	100Ω 1% 0402
			3476	4822 051 30561	560Ω 5% 0.062W	3834	4822 117 13545	100Ω 1% 0402
			3700	4822 051 30472	4.7Ω 5% 0.062W	3836	4822 117 13545	100Ω 1% 0402
			3701	4822 051 30472	4.7Ω 5% 0.062W	3837	4822 117 13545	100Ω 1% 0402
			3702	4822 051 30472	4.7Ω 5% 0.062W	3838	4822 117 13545	100Ω 1% 0402
			3703	3198 031 01090	10Ω 5% 0.01W 0402	3839	4822 117 13545	100Ω 1% 0402
			3704	3198 031 01090	10Ω 5% 0.01W 0402	3840	4822 117 13545	100Ω 1% 0402
			3705	3198 031 01090	10Ω 5% 0.01W 0402	3841	4822 117 13545	100Ω 1% 0402
			3706	3198 031 01090	10Ω 5% 0.01W 0402	3842	4822 117 13545	100Ω 1% 0402
			3707	3198 031 01090	10Ω 5% 0.01W 0402	3843	4822 117 13545	100Ω 1% 0402
			3708	3198 031 01090	10Ω 5% 0.01W 0402	3844	4822 117 13545	100Ω 1% 0402
			3709	4822 051 30101	100Ω 5% 0.062W	3845	4822 117 13545	100Ω 1% 0402
			3710	4822 051 30101	100Ω 5% 0.062W	3846	4822 051 30109	10Ω 5% 0.062W
			3711	4822 117 12925	47kΩ 1% 0.063W 0603	3847	4822 051 30109	

3850	4822 117 13545	100Ω 1% 0402	3D52	2322 704 61002	1kΩ 1%	3E93	3198 031 04730	47Ω 5% 0402
3851	4822 117 13545	100Ω 1% 0402	3D53	4822 117 13548	1kΩ 5% 0402	3I00	4822 117 13606	10kΩ 5% 0.01W 0402
3852	4822 117 13545	100Ω 1% 0402	3D54	4822 117 13601	22kΩ 5% 0402	3I08	4822 117 12925	47kΩ 1% 0.063W 0603
3853	4822 117 13545	100Ω 1% 0402	3D55	2322 704 61002	1kΩ 1%	3I28	4822 117 13545	100Ω 1% 0402
3856	4822 051 30569	56Ω 5% 0.062W	3D56	2322 704 65102	5.1kΩ 1% 0603	3I29	3198 031 01830	18kΩ 5% 0.01W 0402
3A00	4822 117 13601	22kΩ 5% 0402	3D57	5322 117 13047	330Ω 1% 0.063W 0603	3I30	4822 117 13606	10kΩ 5% 0.01W 0402
3A01	4822 117 13606	10kΩ 5% 0.01W 0402	3D58	4822 117 13548	1kΩ 5% 0402	3I31	4822 117 13545	100Ω 1% 0402
3A03	4822 117 13568	6.8Ω 5% 1206	3D60	5322 117 13036	1.2kΩ 1% 0.063W 0603	3I34	4822 117 13601	22kΩ 5% 0402
3A06	4822 117 13545	100Ω 1% 0402	3D61	2322 704 63302	3.3kΩ 1% 0603	3I35	4822 051 30101	100Ω 5% 0.062W
3A09	4822 117 13601	22kΩ 5% 0402	3D62	4822 117 12706	10kΩ 1% 0.063W 0603	3I36	4822 117 13601	22kΩ 5% 0402
3A11	4822 117 11297	100kΩ 5% 0.1W	3D63	2322 704 62202	2.2kΩ 1% 0603	3I37	4822 051 30101	100Ω 5% 0.062W
3A13	3198 031 04730	47Ω 5% 0402	3D64	4822 117 13548	1kΩ 5% 0402	3I38	4822 051 30103	10kΩ 5% 0.062W
3A14	3198 031 04730	47Ω 5% 0402	3D65	4822 117 13548	1kΩ 5% 0402	3I40	4822 051 30759	75Ω 5% 0.062W
3A15	4822 117 11297	100kΩ 5% 0.1W	3D66	4822 117 13601	22kΩ 5% 0402	3I41	4822 117 13545	100Ω 1% 0402
3A16	4822 117 13545	100Ω 1% 0402	3D67	5322 117 13036	1.2kΩ 1% 0.063W 0603	3I48	4822 051 30759	75Ω 5% 0.062W
3A17	4822 117 13545	100Ω 1% 0402	3D68	2322 704 63302	3.3kΩ 1% 0603	3I49	4822 117 13545	100Ω 1% 0402
3A19	4822 117 13545	100Ω 1% 0402	3D69	4822 117 13548	1kΩ 5% 0402	3I50	4822 051 30151	150Ω 5% 0.062W
3A20	4822 117 11297	100kΩ 5% 0.1W	3D70	2322 704 63302	3.3kΩ 1% 0603	3I51	4822 051 30101	100Ω 5% 0.062W
3A22	4822 117 13632	100kΩ 1% 0603 0.62W	3D71	4822 117 13548	1kΩ 5% 0402	3I52	4822 051 30151	150Ω 5% 0.062W
3A23	4822 117 13603	33kΩ 5% 0402	3D72	4822 117 13601	22kΩ 5% 0402	3I53	4822 051 30101	100Ω 5% 0.062W
3A24	3198 031 04730	47Ω 5% 0402	3D73	4822 117 11748	Fuse 2.2Ω 5% 1206	3I54	4822 117 13543	470Ω 5% 0402
3A25	4822 051 30331	330Ω 5% 0.062W	3D79	2322 704 62202	2.2kΩ 1% 0603	3I61	4822 051 30101	100Ω 5% 0.062W
3A26	4822 117 13603	33kΩ 5% 0402	3D80	4822 117 13545	100Ω 1% 0402	3I62	4822 051 30101	100Ω 5% 0.062W
3A27	3198 031 01530	15kΩ 5% 0.01W 0402	3D81	4822 117 10361	680Ω 1% 0.1W	3I67	4822 051 30759	75Ω 5% 0.062W
3A28	3198 031 01530	15kΩ 5% 0.01W 0402	3D82	4822 117 13545	100Ω 1% 0402	3I68	4822 117 13545	100Ω 1% 0402
3A29	4822 051 30331	330Ω 5% 0.062W	3D83	2322 704 61002	1kΩ 1%	3I78	4822 051 30759	75Ω 5% 0.062W
3A30	4822 117 12925	47kΩ 1% 0.063W 0603	3D84	4822 117 13545	100Ω 1% 0402	3I79	4822 051 30101	100Ω 5% 0.062W
3A32	4822 117 13545	100Ω 1% 0402	3D85	4822 051 30471	47Ω 5% 0.062W	3I80	4822 051 30101	100Ω 5% 0.062W
3A33	4822 117 13545	100Ω 1% 0402	3D86	4822 117 13545	100Ω 1% 0402	3I83	4822 117 13545	100Ω 1% 0402
3A34	4822 117 13545	100Ω 1% 0402	3D87	4822 117 13632	100kΩ 1% 0603 0.62W	3I84	4822 051 30759	75Ω 5% 0.062W
3A35	4822 051 30105	1MΩ 5% 0.062W	3D88	5322 117 13036	1.2kΩ 1% 0.063W 0603	3I87	4822 117 13605	Jumper 0402
3A36	4822 117 13545	100Ω 1% 0402	3D89	4822 051 30183	18kΩ 5% 0.062W	3I89	4822 051 30151	150Ω 5% 0.062W
3A38	4822 051 30101	100Ω 5% 0.062W	3D90	4822 117 12925	47kΩ 1% 0.063W 0603	3I90	4822 051 30101	100Ω 5% 0.062W
3A3A	4822 117 13545	100Ω 1% 0402	3E04	4822 051 30479	47Ω 5% 0.062W	3I91	4822 051 30151	150Ω 5% 0.062W
3A3B	4822 117 13545	100Ω 1% 0402	3E05	3198 031 14710	4 x 470Ω 5% 1206	3I92	4822 051 30101	100Ω 5% 0.062W
3A3E	4822 117 13545	100Ω 1% 0402	3E06	3198 031 14710	4 x 470Ω 5% 1206	3I98	4822 117 11297	100kΩ 5% 0.1W
3A3F	4822 117 13545	100Ω 1% 0402	3E07	2350 035 10152	4 x 1.5kΩ 5%	3I9A	4822 117 11297	100kΩ 5% 0.1W
3A40	4822 117 13632	100kΩ 1% 0603 0.62W	3E08	4822 117 11151	1Ω 5%	3IA2	4822 051 30101	100Ω 5% 0.062W
3A42	4822 117 13545	100Ω 1% 0402	3E11	2350 035 10152	4 x 1.5kΩ 5%	3IA3	4822 117 13601	22kΩ 5% 0402
3A45	3198 031 04730	47Ω 5% 0402	3E12	2350 035 10152	4 x 1.5kΩ 5%	3IA4	3198 031 08220	8.2kΩ 5% 0.5W
3A46	4822 117 11297	100kΩ 5% 0.1W	3E14	4822 117 13545	100Ω 1% 0402	3IA5	3198 031 08220	8.2kΩ 5% 0.5W
3A47	3198 031 04730	47Ω 5% 0402	3E16	3198 031 03320	3.3kΩ 5% 0402	3IA6	3198 031 08220	8.2kΩ 5% 0.5W
3A48	4822 117 11297	100kΩ 5% 0.1W	3E18	4822 117 13602	2.2kΩ 5% 0.01W 0402	3IA7	3198 031 08220	8.2kΩ 5% 0.5W
3A49	3198 031 04730	47Ω 5% 0402	3E19	4822 117 13548	1kΩ 5% 0402	3IB1	4822 117 13606	10kΩ 5% 0.01W 0402
3A50	4822 117 13545	100Ω 1% 0402	3E20	4822 117 13545	100Ω 1% 0402	3IB2	4822 051 30101	100Ω 5% 0.062W
3A51	3198 031 04730	47Ω 5% 0402	3E21	4822 117 13548	1kΩ 5% 0402	3IB3	4822 117 13606	10kΩ 5% 0.01W 0402
3A52	3198 031 04730	47Ω 5% 0402	3E22	2350 035 10152	4 x 1.5kΩ 5%	3IB4	4822 051 30223	22kΩ 5% 0.062W
3A53	3198 031 04730	47Ω 5% 0402	3E23	2350 035 10152	4 x 1.5kΩ 5%	3IB5	4822 051 30103	10kΩ 5% 0.062W
3A55	3198 031 04720	4.7kΩ 5% 0402	3E24	2350 035 10152	4 x 1.5kΩ 5%	3IB6	4822 117 13545	100Ω 1% 0402
3A56	3198 031 04720	4.7kΩ 5% 0402	3E25	4822 117 13548	1kΩ 5% 0402	3IB8	4822 117 13606	10kΩ 5% 0.01W 0402
3A57	4822 117 13543	470Ω 5% 0402	3E26	4822 117 13545	100Ω 1% 0402	3IB9	4822 117 12925	47kΩ 1% 0.063W 0603
3A66	4822 117 11297	100kΩ 5% 0.1W	3E27	4822 117 11297	100kΩ 5% 0.1W	3IC1	4822 117 13574	1.5Ω 5% 1206
3B00	4822 117 13548	1kΩ 5% 0402	3E28	4822 117 13548	1kΩ 5% 0402	3IC2	4822 117 13601	22kΩ 5% 0402
3B01	4822 117 13548	1kΩ 5% 0402	3E29	4822 117 13597	330Ω 5% 0402 0.01W	3IC3	4822 117 13601	22kΩ 5% 0402
3B02	4822 117 13596	220Ω 5% 0.01W 0402	3E30	4822 117 13545	100Ω 1% 0402	3IC4	4822 051 30101	100Ω 5% 0.062W
3B03	4822 117 13548	1kΩ 5% 0402	3E31	4822 117 13548	1kΩ 5% 0402	3IC6	4822 051 30101	100Ω 5% 0.062W
3B04	4822 117 13543	470Ω 5% 0402	3E32	4822 117 13545	100Ω 1% 0402	3ID0	3198 031 04720	4.7kΩ 5% 0402
3B05	4822 117 13596	220Ω 5% 0.01W 0402	3E33	4822 117 13545	100Ω 1% 0402	3ID1	4822 117 13545	100Ω 1% 0402
3B06	4822 117 11297	100kΩ 5% 0.1W	3E34	4822 117 13545	100Ω 1% 0402	3ID2	4822 117 11151	1Ω 5%
3B07	4822 117 13606	10kΩ 5% 0.01W 0402	3E35	4822 117 13545	100Ω 1% 0402	3ID6	4822 051 30222	2.2kΩ 5% 0.062W
3B08	4822 117 13548	1kΩ 5% 0402	3E36	4822 117 13545	100Ω 1% 0402	3ID7	4822 117 13545	100Ω 1% 0402
3B09	4822 117 13602	2.2kΩ 5% 0.01W 0402	3E37	4822 117 13548	1kΩ 5% 0402	3ID8	4822 117 13545	100Ω 1% 0402
3B10	4822 117 13543	470Ω 5% 0402	3E38	4822 117 13545	100Ω 1% 0402	3IE0	4822 117 13606	10kΩ 5% 0.01W 0402
3B11	3198 031 04720	4.7kΩ 5% 0402	3E39	4822 117 13545	100Ω 1% 0402	3IE1	4822 117 11297	100kΩ 5% 0.1W
3B12	4822 117 13546	47Ω 5% 0402	3E40	4822 117 13545	100Ω 1% 0402	3IE2	4822 051 30101	100Ω 5% 0.062W
3B13	4822 117 13546	47Ω 5% 0402	3E41	3198 031 14710	4 x 470Ω 5% 1206	3IE3	4822 051 30101	100Ω 5% 0.062W
3B15	4822 117 13543	470Ω 5% 0402	3E42	3198 031 14710	4 x 470Ω 5% 1206	3IE7	4822 051 30759	75Ω 5% 0.062W
3B16	4822 117 13596	220Ω 5% 0.01W 0402	3E43	3198 031 14710	4 x 470Ω 5% 1206	3IE8	4822 051 30759	75Ω 5% 0.062W
3B17	4822 117 13596	220Ω 5% 0.01W 0402	3E44	3198 031 14710	4 x 470Ω 5% 1206	3IE9	4822 117 13601	22kΩ 5% 0402
3B18	4822 117 13596	220Ω 5% 0.01W 0402	3E45	4822 117 13597	330Ω 5% 0402 0.01W	3IF0	4822 051 30759	75Ω 5% 0.062W
3B19	4822 117 13543	470Ω 5% 0402	3E49	4822 117 13602	2.2kΩ 5% 0.01W 0402	3IF1	4822 051 30101	100Ω 5% 0.062W
3B20	4822 117 13548	1kΩ 5% 0402	3E50	4822 117 13606	10kΩ 5% 0.01W 0402	3IF2	3198 031 02720	2.7kΩ 5% 0.01W 0402
3B21	4822 051 30569	56Ω 5% 0.062W	3E51	4822 117 13606	10kΩ 5% 0.01W 0402	3IF3	4822 117 13606	10kΩ 5% 0.01W 0402
3B23	4822 117 13596	220Ω 5% 0.01W 0402	3E52	4822 117 13606	10kΩ 5% 0.01W 0402	3IF4	4822 117 13543	470Ω 5% 0402
3B24	4822 117 13543	470Ω 5% 0402	3E53	4822 117 13606	10kΩ 5% 0.01W 0402	3IF5	4822 117 13601	22kΩ 5% 0402
3B25	3198 031 08220	8.2kΩ 5% 0.5W	3E55	4822 117 13606	10kΩ 5% 0.01W 0402	3IF6	4822 051 30101	100Ω 5% 0.062W
3B26	4822 117 13545	100Ω 1% 0402	3E56	4822 117 13603	33kΩ 5% 0402	3IF7	4822 051 30101	100Ω 5% 0.062W
3B27	4822 117 13545	100Ω 1% 0402	3E57	4822 117 11297	100kΩ 5% 0.1W	3IF8	4822 117 13602	2.2kΩ 5% 0.01W 0402
3B29	4822 117 13545	100Ω 1% 0402	3E60	4822 117 13606	10kΩ 5% 0.01W 0402	3IF9	3198 031 03320	3.3kΩ 5% 0402
3B30	4822 117 13545	100Ω 1% 0402	3E62	4822 117 13548	1kΩ 5% 0402	3IH0	4822 117 13548	1kΩ 5% 0402
3B31	4822 117 13545	100Ω 1% 0402	3E63	4822 117 13606	10kΩ 5% 0.01W 0402	3IH1	4822 117 13545	100Ω 1% 0402
3B32	4822 117 13545	100Ω 1% 0402	3E69	3198 031 04720	4.7kΩ 5% 0402	3IH8	3198 031 04730	47Ω 5% 0402
3C00	4822 051 30222	2.2kΩ 5% 0.062W	3E70	3198 031 04720	4.7kΩ 5% 0402	3II3	3198 031 04730	47Ω 5% 0402
3C01	4822 051 30109	10Ω 5% 0.062W	3E73	4822 117 13606	10kΩ 5% 0.01W 0402	3IU0	4822 117 13545	100Ω 1% 0402
3C03	4822 051 30103	10kΩ 5% 0.062W	3E74	4822 117 13546	47Ω 5% 0402	3IJ1	4822 117 13545	100Ω 1% 0402
3C04	4822 051 30103							

3IL6	4822 051 30101	100Ω 5% 0.062W	3V13	4822 117 13548	1kΩ 5% 0402	9I26	4822 117 13605	Jumper 0402
3IL7	4822 117 13632	100kΩ 1% 0603 0.62W	3V14	4822 117 13546	47Ω 5% 0402	9I27	4822 117 13605	Jumper 0402
3IL8	4822 051 30102	1kΩ 5% 0.062W	3V15	4822 117 13546	47Ω 5% 0402	9I32	4822 117 13605	Jumper 0402
3IL9	4822 051 30102	1kΩ 5% 0.062W	3V16	4822 117 13546	47Ω 5% 0402	9I33	4822 117 13605	Jumper 0402
3IM0	4822 051 30109	10Ω 5% 0.062W	3V21	4822 117 13546	47Ω 5% 0402	9I34	4822 117 13605	Jumper 0402
3IM1	4822 051 30393	39kΩ 5% 0.062W	3V22	4822 117 13546	47Ω 5% 0402	9I35	4822 117 13605	Jumper 0402
3IM2	4822 051 30471	47Ω 5% 0.062W	3V23	2322 706 71201	120Ω 1% 0402	9I36	4822 117 13605	Jumper 0402
3IM3	4822 051 30561	560Ω 5% 0.062W	3V24	2322 706 71201	120Ω 1% 0402	9I37	4822 117 13605	Jumper 0402
3IM4	4822 051 30102	1kΩ 5% 0.062W	3V25	2322 706 71201	120Ω 1% 0402	9I38	4822 117 13605	Jumper 0402
3IM5	4822 117 13632	100kΩ 1% 0603 0.62W	3V26	2322 706 71201	120Ω 1% 0402	9I57	4822 117 13605	Jumper 0402
3IM6	4822 051 30102	1kΩ 5% 0.062W	3V27	2322 706 71201	120Ω 1% 0402	9I58	4822 117 13605	Jumper 0402
3IM7	4822 051 30101	100Ω 5% 0.062W	3V28	2322 706 71201	120Ω 1% 0402	9I85	4822 117 13605	Jumper 0402
3IM8	4822 051 30221	220Ω 5% 0.062W	3V29	4822 117 13597	330Ω 5% 0402 0.01W	9I89	4822 117 13605	Jumper 0402
3IM9	4822 051 30393	39kΩ 5% 0.062W	3V30	3198 031 04720	4.7kΩ 5% 0402	9IA3	4822 117 13605	Jumper 0402
3IN0	4822 051 30109	10Ω 5% 0.062W	3V31	3198 031 04730	47Ω 5% 0402	9IA4	4822 117 13605	Jumper 0402
3IN1	4822 117 13601	22kΩ 5% 0402	3V32	3198 031 04720	4.7kΩ 5% 0402	9IA5	4822 117 13605	Jumper 0402
3IN4	2322 750 63908	3.9Ω 5% Fuse 1206	3V33	3198 031 04720	4.7kΩ 5% 0402	9IA6	4822 117 13605	Jumper 0402
3IN5	4822 117 13601	22kΩ 5% 0402	3V35	4822 117 13548	1kΩ 5% 0402	9IA7	4822 117 13605	Jumper 0402
3IN6	4822 117 13601	22kΩ 5% 0402	3V36	4822 117 13543	470Ω 5% 0402	9IA8	4822 117 13605	Jumper 0402
3IN7	4822 051 30101	100Ω 5% 0.062W	3V37	3198 031 03320	3.3kΩ 5% 0402	9IC1	4822 117 13605	Jumper 0402
3IN8	4822 051 30101	100Ω 5% 0.062W	3V38	4822 117 12915	47kΩ 1% 0.063W 0603	9IC2	4822 117 13605	Jumper 0402
3IN9	4822 117 13601	22kΩ 5% 0402	3V39	4822 051 30101	100Ω 5% 0.062W	9IC3	4822 117 13605	Jumper 0402
3IO1	4822 051 30101	100Ω 5% 0.062W	3V40	4822 051 30101	100Ω 5% 0.062W	9ID1	4822 051 30008	Jumper 0603
3IO2	4822 117 13606	10kΩ 5% 0.01W 0402	3V41	4822 051 30222	2.2kΩ 5% 0.062W	9ID2	4822 051 30008	Jumper 0603
3IO3	4822 117 13606	10kΩ 5% 0.01W 0402	3V43	4822 117 12925	47kΩ 1% 0.063W 0603	9ID3	4822 051 30008	Jumper 0603
3IO5	4822 117 13606	10kΩ 5% 0.01W 0402	3V44	4822 051 30103	10kΩ 5% 0.062W	9ID4	4822 051 30008	Jumper 0603
3IO6	4822 117 13606	10kΩ 5% 0.01W 0402	3V47	4822 051 30222	2.2kΩ 5% 0.062W	9ID8	4822 117 13605	Jumper 0402
3IP8	4822 051 30103	10kΩ 5% 0.062W	3V48	4822 051 30101	100Ω 5% 0.062W	9P69	4822 117 13605	Jumper 0402
3IR5	4822 117 12925	47kΩ 1% 0.063W 0603	3V49	4822 051 30101	100Ω 5% 0.062W	9P70	4822 117 13605	Jumper 0402
3IS0	4822 117 12521	68Ω 1% 0.1W	3V56	4822 117 13545	100Ω 1% 0402	9P71	4822 117 13605	Jumper 0402
3IS1	4822 117 12521	68Ω 1% 0.1W	3Y02	4822 117 13545	100Ω 1% 0402	9S01	4822 051 30008	Jumper 0603
3IS2	4822 051 30101	100Ω 5% 0.062W	3Y03	4822 117 11151	1Ω 5%	9S02	4822 051 30008	Jumper 0603
3IS3	4822 051 30101	100Ω 5% 0.062W	9001	4822 051 30008	Jumper 0603	9S03	4822 051 30008	Jumper 0603
3IS4	4822 051 30101	100Ω 5% 0.062W	9002	4822 051 30008	Jumper 0603	9S04	4822 051 30008	Jumper 0603
3IT0	4822 117 12925	47kΩ 1% 0.063W 0603	9010	4822 051 30008	Jumper 0603	9S05	4822 051 30008	Jumper 0603
3IT1	4822 117 12925	47kΩ 1% 0.063W 0603	9011	4822 051 30008	Jumper 0603	9S06	4822 051 30008	Jumper 0603
3IT2	4822 117 13632	100kΩ 1% 0603 0.62W	9012	4822 051 30008	Jumper 0603	9S07	4822 051 30008	Jumper 0603
3IT5	4822 117 12521	68Ω 1% 0.1W	9013	4822 051 30008	Jumper 0603	9S08	4822 051 30008	Jumper 0603
3IT6	4822 117 12521	68Ω 1% 0.1W	9016	4822 051 30008	Jumper 0603	9S09	4822 051 30008	Jumper 0603
3LO1	4822 051 20471	470Ω 5% 0.1W	9019	4822 051 30008	Jumper 0603	9S11	4822 051 30008	Jumper 0603
3LO2	4822 051 20471	470Ω 5% 0.1W	9020	4822 051 30008	Jumper 0603	9S13	4822 051 30008	Jumper 0603
3LO3	4822 117 13545	100Ω 1% 0402	9300	4822 051 30008	Jumper 0603	9S14	4822 051 30008	Jumper 0603
3LO4	4822 117 13545	100Ω 1% 0402	9322	4822 051 30101	100Ω 5% 0.062W	9S15	4822 051 30008	Jumper 0603
3LO5	4822 117 13545	100Ω 1% 0402	9401	4822 051 30008	Jumper 0603	9S16	4822 051 30008	Jumper 0603
3LO6	4822 117 13545	100Ω 1% 0402	9403	4822 051 30008	Jumper 0603	9S17	4822 051 30008	Jumper 0603
3LO7	4822 117 13606	10kΩ 5% 0.01W 0402	9406	4822 051 30008	Jumper 0603	9S30	4822 051 30008	Jumper 0603
3LO8	3198 031 02720	2.7kΩ 5% 0.01W 0402	9407	4822 051 30008	Jumper 0603	9S31	4822 051 30008	Jumper 0603
3L11	4822 117 13545	100Ω 1% 0402	9410	4822 051 30008	Jumper 0603	9S32	4822 051 30008	Jumper 0603
3L12	4822 051 30471	47Ω 5% 0.062W	9413	4822 051 30008	Jumper 0603	9S33	4822 051 30008	Jumper 0603
3L13	4822 051 30151	150Ω 5% 0.062W	9414	4822 051 30008	Jumper 0603	9S34	4822 051 30008	Jumper 0603
3L15	4822 051 30151	150Ω 5% 0.062W	9416	4822 051 30008	Jumper 0603	9S35	4822 051 30008	Jumper 0603
3L16	4822 051 30151	150Ω 5% 0.062W	9417	4822 051 30008	Jumper 0603	9S36	4822 051 30008	Jumper 0603
3L17	4822 051 30471	47Ω 5% 0.062W	9702	4822 051 30008	Jumper 0603	9S37	4822 051 30008	Jumper 0603
3L22	4822 117 13602	2.2kΩ 5% 0.01W 0402	9703	4822 051 30008	Jumper 0603	9S38	4822 051 30008	Jumper 0603
3L23	4822 051 30471	47Ω 5% 0.062W	9708	4822 051 30008	Jumper 0603	9S65	4822 051 30008	Jumper 0603
3L24	4822 051 20471	470Ω 5% 0.1W	9712	4822 051 30008	Jumper 0603	9T01	4822 051 30008	Jumper 0603
3L25	4822 117 13545	100Ω 1% 0402	9714	4822 051 30008	Jumper 0603	9T02	4822 051 30008	Jumper 0603
3L28	4822 051 30471	47Ω 5% 0.062W	9716	4822 051 30008	Jumper 0603	9T04	4822 051 30008	Jumper 0603
3P65	4822 117 13545	100Ω 1% 0402	9717	4822 051 30008	Jumper 0603	9T07	4822 051 30008	Jumper 0603
3P66	4822 117 13545	100Ω 1% 0402	9721	4822 051 30008	Jumper 0603	9T08	4822 051 30008	Jumper 0603
3P67	3198 031 04720	4.7kΩ 5% 0402	9723	4822 051 30008	Jumper 0603	9T11	4822 051 30008	Jumper 0603
3P69	3198 031 04720	4.7kΩ 5% 0402	9725	4822 051 30008	Jumper 0603	9T12	4822 051 30008	Jumper 0603
3S01	4822 051 30008	Jumper 0603	9727	4822 051 30008	Jumper 0603	9T13	4822 051 30008	Jumper 0603
3S02	4822 051 30223	22kΩ 5% 0.062W	9728	4822 051 30008	Jumper 0603	9T14	4822 051 20008	Jumper 0805
3S03	4822 051 30223	22kΩ 5% 0.062W	9729	4822 051 30008	Jumper 0603	9T15	4822 051 30008	Jumper 0603
3S04	3198 031 03320	3.3kΩ 5% 0402	9744	4822 051 30008	Jumper 0603	9U99	2038 035 13207	1000μF 20% 16V
3S05	3198 031 05620	5.6 kΩ 5% 0.01W 0402	9747	4822 051 30008	Jumper 0603	9V21	4822 117 13605	Jumper 0402
3S06	4822 117 12925	47kΩ 1% 0.063W 0603	9760	4822 051 30008	Jumper 0603	9V23	4822 320 12423	Speaker cable
3S07	4822 051 30103	10kΩ 5% 0.062W	9761	4822 051 30008	Jumper 0603	9Y01	4822 117 13605	Jumper 0402
3S08	4822 051 30221	220Ω 5% 0.062W	9762	4822 051 30008	Jumper 0603	9Y03	4822 117 13605	Jumper 0402
3S09	4822 117 13606	10kΩ 5% 0.01W 0402	9763	4822 051 30008	Jumper 0603			
3S10	3198 031 01530	15kΩ 5% 0.01W 0402	9764	4822 051 30008	Jumper 0603			
3S11	4822 051 30101	100Ω 5% 0.062W	9765	4822 051 30008	Jumper 0603			
3S12	4822 117 11297	100kΩ 5% 0.1W	9766	4822 051 30008	Jumper 0603			
3S13	4822 117 11297	100kΩ 5% 0.1W	9772	4822 051 30008	Jumper 0603	5309	4822 051 30008	Jumper 0603
3U47	4822 051 30103	10kΩ 5% 0.062W	9A00	4822 117 13605	Jumper 0402	5310	4822 051 30008	Jumper 0603
3U48	4822 051 30103	10kΩ 5% 0.062W	9A01	4822 117 13605	Jumper 0402	5311	4822 051 30008	Jumper 0603
3U49	4822 051 30102	1kΩ 5% 0.062W	9A04	4822 117 13605	Jumper 0402	5318	2422 535 94092	33μH 10% 0805
3U50	4822 051 30474	470kΩ 5% 0.062W	9A05	4822 117 13605	Jumper 0402	5402	3198 018 38280	8.2μH 10% 0805
3U56	4822 051 30103	10kΩ 5% 0.062W	9A06	4822 117 13605	Jumper 0402	5404	2422 535 95427	Bead 120Ω at 100MHz
3U57	4822 051 30222	2.2kΩ 5% 0.062W	9A09	4822 051 20008	Jumper 0805	5405	2422 535 95427	Bead 120Ω at 100MHz
3U58	4822 051 30392	3.9Ω 5% 0.063W 0603	9A12	4822 117 13605	Jumper 0402	5406	4822 051 30008	Jumper 0603
3U59	4822 117 12925	47kΩ 1% 0.063W 0603	9B01	4822 051 30008	Jumper 0603	5408	2422 549 44875	Trimmer 91MHz 5CCB
3V00	4822 051 30472	4.7Ω 5% 0.062W	9C02	4822 051 30008	Jumper 0603	5411	3198 018 33370	0.33μH 10% 0805
3V03	4822 117 13546	47Ω 5% 0402	9D55	4822 051 30008	Jumper 0603	5415	4822 157 11716	Bead 30Ω 100MHz
3V04	4822 117 13546	47Ω 5% 0402	9E54	4822 117 13605	Jumper 0402	5416	4822 157 11716	Bead 30Ω 100MHz
3V05	4822 117 13546	47Ω 5% 0402	9I00	4822 117 13605	Jumper 0402	5700	4822 157 11716	Bead 30Ω 100MHz
3V06	4822 117 13545	100Ω 1% 0402	9I02	4822 117 13605	Jumper 0402	5701	4822 157 11716	Bead 30Ω 100MHz
3V07	3198 031 04720	4.7kΩ 5% 0402	9I06	4822 117 13605	Jumper 0402	5702	4822 157 11716	Bead 30Ω 100MHz
3V08	4822 117 13548	1kΩ 5% 0402	9I13	4822 051 30008	Jumper 0603	5703	4822 157 71206	Bead 600Ω 100MHz
3V09	4822 117 13545	100Ω 1% 0402	9I17	4822 051 30008	Jumper 0603	5706	4822 157 11716	Bead 30Ω 100MHz
3V10	4822 117 13545	100Ω 1% 0402	9I18	4822 051 30008	Jumper 0603	5707	4822 157 11716	Bead 30Ω 100MHz
3V11	4822 117 13545	100Ω 1% 0402	9I24	4822 117 13605	Jumper 0402	5710	4822 157 11716	Bead 30Ω 100MHz
3V12	4822 117 13545	100Ω 1% 0402	9I25	4822 117 13605	Jumper 0402	5711	4822 157 11716	Bead 30Ω 100MHz

5712	4822 156 21729	Bead 1kΩ 100MHz 0805	5L11	4822 157 11716	Bead 30Ω 100MHz	6125	4822 130 11416	PDZ6.8B
5713	4822 157 11716	Bead 30Ω 100MHz	5L12	4822 157 11716	Bead 30Ω 100MHz	6126	4822 130 11416	PDZ6.8B
5714	4822 157 71206	Bead 600Ω 100MHz	5L13	4822 156 21729	Bead 1kΩ 100MHz 0805	6127	4822 130 11416	PDZ6.8B
5715	4822 157 11716	Bead 30Ω 100MHz	5L14	4822 156 21729	Bead 1kΩ 100MHz 0805	6128	4822 130 11416	PDZ6.8B
5716	4822 156 21729	Bead 1kΩ 100MHz 0805	5L15	4822 156 21729	Bead 1kΩ 100MHz 0805	6129	4822 130 11416	PDZ6.8B
5717	4822 156 21729	Bead 1kΩ 100MHz 0805	5P51	4822 157 11716	Bead 30Ω 100MHz	6130	4822 130 11416	PDZ6.8B
5718	4822 157 11716	Bead 30Ω 100MHz	5S01	4822 157 11716	Bead 30Ω 100MHz	6131	4822 130 11416	PDZ6.8B
5719	4822 156 21729	Bead 1kΩ 100MHz 0805	5S02	4822 157 11716	Bead 30Ω 100MHz	6132	4822 130 11416	PDZ6.8B
5720	4822 157 11876	6.8μH 10% 0805	5S03	4822 157 11716	Bead 30Ω 100MHz	6133	4822 130 11416	PDZ6.8B
5721	4822 157 11716	Bead 30Ω 100MHz	5S04	4822 157 11716	Bead 30Ω 100MHz	6136	4822 130 11416	PDZ6.8B
5722	4822 157 11716	Bead 30Ω 100MHz	5S05	4822 157 11716	Bead 30Ω 100MHz	6143	4822 130 11416	PDZ6.8B
5724	4822 156 21729	Bead 1kΩ 100MHz 0805	5T02	2422 535 94134	10μH 20% 0805	6145	4822 130 11416	PDZ6.8B
5725	4822 157 11716	Bead 30Ω 100MHz	5U05	2422 535 94134	10μH 20% 0805	6146	4822 130 11416	PDZ6.8B
5726	4822 156 21729	Bead 1kΩ 100MHz 0805	5U06	2422 535 94134	10μH 20% 0805	6147	4822 130 11416	PDZ6.8B
5727	4822 156 21729	Bead 1kΩ 100MHz 0805	5U07	4822 157 11716	Bead 30Ω 100MHz	6148	4822 130 11416	PDZ6.8B
5728	4822 157 11716	Bead 30Ω 100MHz	5U08	4822 157 11716	Bead 30Ω 100MHz	6150	4822 130 11416	PDZ6.8B
5729	4822 157 11716	Bead 30Ω 100MHz	5V06	3198 018 90050	Bead 1kΩ at 100MHz	6152	4822 130 11416	PDZ6.8B
5731	4822 156 21729	Bead 1kΩ 100MHz 0805	5V07	3198 018 90050	Bead 1kΩ at 100MHz	6153	4822 130 11416	PDZ6.8B
5736	4822 157 11876	6.8μH 10% 0805	5V08	3198 018 90050	Bead 1kΩ at 100MHz	6154	4822 130 11416	PDZ6.8B
5737	4822 156 21729	Bead 1kΩ 100MHz 0805	5V21	4822 157 11716	Bead 30Ω 100MHz	6155	4822 130 11416	PDZ6.8B
5742	4822 157 11716	Bead 30Ω 100MHz	5V22	4822 157 11716	Bead 30Ω 100MHz	6156	4822 130 11416	PDZ6.8B
5743	4822 157 11716	Bead 30Ω 100MHz	5V23	4822 157 11716	Bead 30Ω 100MHz	6169	4822 130 11416	PDZ6.8B
5744	4822 157 11716	Bead 30Ω 100MHz	5V24	4822 157 11716	Bead 30Ω 100MHz	6170	4822 130 11416	PDZ6.8B
5746	4822 157 11716	Bead 30Ω 100MHz	5V25	4822 157 11716	Bead 30Ω 100MHz	6187	4822 130 11416	PDZ6.8B
5747	4822 157 11716	Bead 30Ω 100MHz	5V26	4822 157 11716	Bead 30Ω 100MHz	6188	4822 130 11416	PDZ6.8B
5748	4822 157 11716	Bead 30Ω 100MHz	5V27	3198 018 34770	0.47μH 10% 0805	6189	4822 130 11416	PDZ6.8B
5750	4822 157 11716	Bead 30Ω 100MHz	5V28	3198 018 34770	0.47μH 10% 0805	6190	4822 130 11416	PDZ6.8B
5751	4822 157 11716	Bead 30Ω 100MHz	5V29	4822 157 11716	Bead 30Ω 100MHz	6191	4822 130 11416	PDZ6.8B
5752	4822 157 11716	Bead 30Ω 100MHz	5V30	4822 157 11716	Bead 30Ω 100MHz	6192	4822 130 11416	PDZ6.8B
5753	4822 157 11716	Bead 30Ω 100MHz	5V31	4822 157 11716	Bead 30Ω 100MHz	6193	4822 130 11416	PDZ6.8B
5754	4822 157 11716	Bead 30Ω 100MHz	5V32	3198 018 34770	0.47μH 10% 0805	6194	4822 130 11397	BAS316
5755	4822 157 11716	Bead 30Ω 100MHz	5Y01	2422 549 45325	Bead 67Ω at 100MHz.	6195	4822 130 11397	BAS316
5756	4822 157 11716	Bead 30Ω 100MHz	5Y02	2422 549 45325	Bead 67Ω at 100MHz.	6196	4822 130 11397	BAS316
5757	4822 157 11716	Bead 30Ω 100MHz	5Y03	2422 549 45325	Bead 67Ω at 100MHz.	6197	4822 130 11397	BAS316
5A00	4822 157 11716	Bead 30Ω 100MHz	5Y04	2422 549 45325	Bead 67Ω at 100MHz.	6198	4822 130 11397	BAS316
5A01	4822 157 11716	Bead 30Ω 100MHz	5Y05	2422 549 45325	Bead 67Ω at 100MHz.	6199	4822 130 11397	BAS316
5A02	4822 157 11716	Bead 30Ω 100MHz				61A3	5322 130 34337	BAV99
5A03	4822 157 11716	Bead 30Ω 100MHz				61A4	5322 130 34337	BAV99
5A06	4822 157 11716	Bead 30Ω 100MHz				61A6	4822 130 11397	BAS316
5A17	4822 051 30151	150Ω 5% 0.062W				61A7	4822 130 11397	BAS316
5A18	4822 051 30151	150Ω 5% 0.062W	6001	4822 130 80622	BAT54	6T08	9340 548 71115	PDZ33B
5A19	4822 157 11828	22μH 20% 0805	6002	4822 130 11397	BAS316	6U16	4822 130 11522	UDZ15B
5A20	4822 157 11716	Bead 30Ω 100MHz	6003	4822 130 80622	BAT54	6V01	4822 130 11397	BAS316
5A21	4822 157 11716	Bead 30Ω 100MHz	6004	4822 130 80622	BAT54	6V02	4822 130 11397	BAS316
5A38	4822 157 11716	Bead 30Ω 100MHz	6005	4822 130 11422	PLVA2650A	6V03	4822 130 11397	BAS316
5B00	2422 535 94092	33μH 10% 0805	6830	4822 130 11397	BAS316	6V03	4822 130 11397	BAS316
5B01	2422 535 94092	33μH 10% 0805	6831	4822 130 11397	BAS316	6V21	5322 130 34337	BAV99
5B02	2422 535 94092	33μH 10% 0805	6832	4822 130 11397	BAS316	6V22	5322 130 34337	BAV99
5B03	4822 157 11134	15μF	6833	4822 130 11397	BAS316	6V23	5322 130 34337	BAV99
5B04	4822 156 21729	Bead 1kΩ 100MHz 0805	6834	4822 130 11397	BAS316	6V24	5322 130 34337	BAV99
5B05	4822 156 21729	Bead 1kΩ 100MHz 0805	6835	4822 130 11397	BAS316	6V25	5322 130 34337	BAV99
5B06	4822 157 11716	Bead 30Ω 100MHz	6836	4822 130 11397	BAS316	6V26	5322 130 34337	BAV99
5B07	4822 156 21729	Bead 1kΩ 100MHz 0805	6837	4822 130 11397	BAS316	6V27	5322 130 34337	BAV99
5B08	3198 018 51090	10μH 10% 0603	6838	4822 130 11397	BAS316	6V28	5322 130 34337	BAV99
5B09	2422 536 00747	100μH 10% 1210	6839	4822 130 11397	BAS316	6V29	4822 130 11397	BAS316
5D51	4822 157 11716	Bead 30Ω 100MHz	6840	4822 130 11397	BAS316	6V30	9340 553 52115	BAS321
5D54	4822 157 11716	Bead 30Ω 100MHz	6841	4822 130 11397	BAS316	6V31	9340 553 52115	BAS321
5D56	4822 156 21729	Bead 1kΩ 100MHz 0805	6842	4822 130 11397	BAS316	6V32	9340 553 52115	BAS321
5D57	4822 157 11716	Bead 30Ω 100MHz	6843	4822 130 11397	BAS316	6V33	9340 553 52115	BAS321
5D58	4822 157 11716	Bead 30Ω 100MHz	6844	4822 130 11397	BAS316			
5D59	4822 157 11716	Bead 30Ω 100MHz	6845	4822 130 11397	BAS316			
5E00	2422 549 42896	Bead 120Ω 100MHz	6846	4822 130 11397	BAS316			
5E01	2422 549 42896	Bead 120Ω 100MHz	6847	4822 130 11397	BAS316			
5E02	2422 549 42896	Bead 120Ω 100MHz	6A00	4822 130 11551	UDZS10B	7001	9352 684 81557	SAA5801H/015
5E03	2422 549 42896	Bead 120Ω 100MHz	6A01	4822 130 10838	UDZ3.3B	7002	3198 010 42320	BC857BW
5E04	2422 549 42896	Bead 120Ω 100MHz	6A02	4822 130 11397	BAS316	7003	3198 010 42310	BC847BW
5E05	2422 549 42896	Bead 120Ω 100MHz	6B00	4822 130 11397	BAS316	7004	3198 010 42310	BC847BW
5E08	4822 157 11716	Bead 30Ω 100MHz	6B01	4822 130 11397	BAS316	7005	9322 172 45668	LF33ABDT
5E50	2422 549 43062	Bead 600Ω at 100MHz	6B03	4822 130 11397	BAS316	7006	9322 181 49668	M29W320DT-90N1
5E51	2422 549 43062	Bead 600Ω at 100MHz	6B04	4822 130 11397	BAS316	7007	9322 157 20668	MSM51V18165F-60J
5E53	2422 535 94134	10μH 20% 0805	6B05	4822 130 11397	BAS316	7008	3198 010 42310	BC847BW
5E57	2422 549 43062	Bead 600Ω at 100MHz	6B06	4822 130 11397	BAS316	7009	3198 010 42310	BC847BW
5E58	2422 549 43062	Bead 600Ω at 100MHz	6D62	4822 130 11564	UDZ3.9B	7010	3198 010 42320	BC857BW
5E59	4822 157 11716	Bead 30Ω 100MHz	6D63	4822 130 11397	BAS316	7011	9322 156 81668	M24C32-WMN6TNKSA
5I00	2422 549 43062	Bead 600Ω at 100MHz	6D64	4822 130 11397	BAS316	7012	9322 156 72668	M29W400BT-90N1
5I01	2422 549 43062	Bead 600Ω at 100MHz	6E54	4822 130 11397	BAS316	7013	3198 010 42310	BC847BW
5I02	2422 549 43769	Bead 30Ω 100MHz	6E55	4822 130 11397	BAS316	7014	3198 010 42320	BC857BW
5I03	2422 549 43062	Bead 600Ω at 100MHz	6I03	5322 130 34337	BAV99	7017	4822 130 10255	MUN2213
5I04	2422 549 43062	Bead 600Ω at 100MHz	6I04	5322 130 34337	BAV99	7018	9352 115 40118	74LVC245APW
5I05	4822 157 11716	Bead 30Ω 100MHz	6I05	4822 130 11397	BAS316	7019	9352 115 40118	74LVC245APW
5I06	4822 157 11716	Bead 30Ω 100MHz	6I10	4822 130 11416	PDZ6.8B	7020	3198 010 42310	BC847BW
5I07	2422 549 43769	Bead 30Ω 100MHz	6I11	4822 130 11416	PDZ6.8B	7066	3104 317 05411	Software (check Prod.Surv.)
5I09	4822 157 11716	Bead 30Ω 100MHz	6I12	4822 130 11416	PDZ6.8B	7070	3104 317 06291	Software (check Prod.Surv.)
5I10	2422 536 00667	1000μF 20% 7032	6I13	4822 130 11416	PDZ6.8B			
5I21	2422 549 43769	Bead 30Ω 100MHz	6I14	4822 130 11416	PDZ6.8B	7320	3198 010 42310	BC847BW
5I22	2422 549 43769	Bead 30Ω 100MHz	6I15	4822 130 11416	PDZ6.8B	7322	3198 010 42310	BC847BW
5I23	2422 549 43769	Bead 30Ω 100MHz	6I16	4822 130 11416	PDZ6.8B	7323	9352 625 24518	TDA9321H/N2
5L02	3198 018 51080	1μH 10% 0603	6I17	4822 130 11416	PDZ6.8B	7410	3198 010 42310	BC847BW
5L04	3198 018 54770	0.47μF 10% 0603	6I18	4822 130 11416	PDZ6.8B	7411	5322 130 60159	BC846B
5L06	3198 018 51080	1μH 10% 0603	6I20	4822 130 11416	PDZ6.8B	7414	3198 010 42310	BC847BW
5L07	4822 157 11716	Bead 30Ω 100MHz	6I21	4822 130 11416	PDZ6.8B	7415	3198 010 42310	BC847BW
5L08	4822 157 11716	Bead 30Ω 100MHz	6I22	4822 130 11416	PDZ6.8B	7706	9322 142 88668	LF25CDT
5L09	4822 157 11716	Bead 30Ω 100MHz	6I23	4822 130 11416	PDZ6.8B	7707	5322 130 60159	BC846B
5L10	4822 157 11716	Bead 30Ω 100MHz	6I24	4822 130 11416	PDZ6.8B	7708	5322 130 60159	BC846B

7709	5322 130 60159	BC846B
7710	5322 130 60159	BC846B
7711	2422 486 80938	Socket 32p f
7712	9351 870 00118	74HC573PW
7713	9352 688 09557	SAA4978H/V204
7714	9965 000 02179	MS81V04160-25TB
7715	4822 209 73852	PMBT2369
7717	9322 183 81668	MSM54V12222B-25JS
7718	9352 695 58557	SAA4993H/V1
7719	9322 183 81668	MSM54V12222B-25JS
7722	9965 000 02179	MS81V04160-25TB
7723	9965 000 02179	MS81V04160-25TB
7724	9322 188 08702	T8F24EF-0002
7725	4822 209 73852	PMBT2369
7727	9322 170 14668	LF15ABDT
7740	9352 687 20125	74LVC1G125GW
7741	9352 687 20125	74LVC1G125GW
7742	9352 115 40118	74LVC245APW
7743	9352 115 40118	74LVC245APW
7744	9352 115 40118	74LVC245APW
7745	9352 115 40118	74LVC245APW
7746	9322 190 24668	CY2302SC-1
7747	9352 687 21165	74LVC1G126GW
7748	9352 687 20125	74LVC1G125GW
7999	3104 317 45521	Software (check Prod.Surv.)
7A00	4822 209 30095	LM833D
7A01	3198 010 42310	BC847BW
7A02	9322 199 42702	MSP3421G-Q1-B8V3
7A03	4822 209 30095	LM833D
7A04	9322 199 16668	M74HC590T
7A05	9322 199 16668	M74HC590T
7A07	9322 183 05668	TS482ID
7A08	4822 130 60373	BC856B
7A09	4822 130 60373	BC856B
7A10	9340 425 20115	BC847BS
7A12	9322 153 66668	CY7C199-15ZC
7A13	9351 869 80118	74HCT573DB
7A14	9351 869 80118	74HCT573DB
7A15	3198 010 42310	BC847BW
7B00	9322 170 65671	UPD64083GF
7B01	4822 130 60373	BC856B
7B02	4822 130 60373	BC856B
7B03	5322 130 60159	BC846B
7B04	4822 130 60373	BC856B
7B05	5322 130 60159	BC846B
7B06	4822 130 60373	BC856B
7B07	9322 142 88668	LF25CDT
7B08	9322 173 45685	NCP302LSN27
7B09	5322 130 60159	BC846B
7B10	5322 130 60159	BC846B
7B11	5322 130 60159	BC846B
7D51	4822 209 12776	TDA8601T/C1
7D52	4822 130 62755	BF570
7D53	4822 130 62755	BF570
7D54	4822 130 62755	BF570
7D55	4822 130 62755	BF570
7D57	9322 131 22668	TSH95D
7E02	9322 196 51668	EPCS1SI8
7E05	9322 170 14668	LF15ABDT
7E08	3198 010 42320	BC857BW
7E09	9322 195 65668	AD9066JR
7E10	9352 686 35118	PCA9515DP
7E12	9340 425 20115	BC847BS
7E13	3198 010 42320	BC857BW
7E14	3198 010 42310	BC847BW
7E16	9322 195 65668	AD9066JR
7E17	3198 010 42320	BC857BW
7E18	9322 146 75685	TS431L
7E19	3198 010 42310	BC847BW
7E20	3198 010 42320	BC857BW
7E21	3198 010 42310	BC847BW
7E22	3198 010 42310	BC847BW
7E23	3198 010 42320	BC857BW
7E24	9322 146 75685	TS431L
7I01	9340 425 20115	BC847BS
7I02	9340 425 20115	BC847BS
7I05	3198 010 42320	BC857BW
7I07	4822 130 60142	BC869
7I09	3198 010 42310	BC847BW
7I10	9352 686 35118	PCA9515DP
7I11	4822 130 10255	MUN2213
7I12	4822 130 10255	MUN2213
7I13	4822 130 42804	BC817-25
7I14	3198 010 42310	BC847BW
7I15	3198 010 42310	BC847BW
7I16	9340 425 20115	BC847BS
7I17	9322 116 87668	TEA6422D
7I19	9352 686 35118	PCA9515DP
7I26	4822 130 60373	BC856B
7I27	5322 130 60159	BC846B
7I28	4822 130 60373	BC856B
7I29	5322 130 60159	BC846B
7I30	5322 130 60159	BC846B

7I31	4822 130 60373	BC856B
7I32	9351 869 40118	74HC4053PW
7I44	9340 425 20115	BC847BS
7L01	9322 181 72671	AD9883AKST-110
7L02	4822 209 17398	LD1117DT33
7L03	4822 209 73852	PMBT2369
7P56	4822 209 17345	M62320FP
7S03	9340 425 20115	BC847BS
7S04	3198 010 42310	BC847BW
7U14	3198 010 42310	BC847BW
7U15	3198 010 42320	BC857BW
7U16	9322 091 04668	SI4410DY
7V01	9322 196 44671	EP1C6Q240C8
7V02	9322 159 45668	DS90C385MTD
7V21	9322 183 61682	SI907BCQ52
7V22	4822 130 60373	BC856B
7V23	9965 000 04199	Connector 2p
7V24	9965 000 04199	Connector 2p
7V26	9322 145 26668	M24C02-WMN6

EMC Interface Panel [EMC]

Various

0002	3122 358 76831	EMC foam fiter panel
1105	3122 357 22052	EMC filter panel
1320	2422 025 16545	Connector 10p m
1330	2422 025 16545	Connector 10p m
1345	2422 025 16835	Connector 3p m
1355	2422 025 16835	Connector 3p m



2300	5322 126 11583	10nF 10% 50V 0603
2301	5322 126 11583	10nF 10% 50V 0603
2302	3198 016 31020	1nF 25V 0603
2303	5322 126 11583	10nF 10% 50V 0603
2304	5322 126 11583	10nF 10% 50V 0603
2305	5322 126 11583	10nF 10% 50V 0603
2306	5322 126 11583	10nF 10% 50V 0603
2307	5322 126 11583	10nF 10% 50V 0603
2308	5322 126 11583	10nF 10% 50V 0603



3300	4822 051 30101	100Ω 5% 0.062W
3301	4822 051 30101	100Ω 5% 0.062W
3302	4822 051 30101	100Ω 5% 0.062W
3303	4822 051 30101	100Ω 5% 0.062W
3304	4822 051 30101	100Ω 5% 0.062W
3305	4822 051 30101	100Ω 5% 0.062W
3306	4822 051 30101	100Ω 5% 0.062W
3307	4822 051 30101	100Ω 5% 0.062W



5300	2422 549 43062	Bead 600Ω at 100MHz
5301	2422 549 43062	Bead 600Ω at 100MHz
5302	2422 549 43062	Bead 600Ω at 100MHz
5303	2422 549 43062	Bead 600Ω at 100MHz
5304	2422 549 43062	Bead 600Ω at 100MHz
5305	2422 549 43062	Bead 600Ω at 100MHz
5306	2422 549 43062	Bead 600Ω at 100MHz
5307	2422 549 43062	Bead 600Ω at 100MHz
5308	2422 549 43062	Bead 600Ω at 100MHz
5309	2422 549 43062	Bead 600Ω at 100MHz
5310	2422 549 43062	Bead 600Ω at 100MHz
5311	2422 549 43062	Bead 600Ω at 100MHz
5312	2422 549 43062	Bead 600Ω at 100MHz
5313	2422 549 43062	Bead 600Ω at 100MHz

LED Switch Panel [LD]

Various

0320	2422 025 16545	Connector 10p m
1072	3122 357 22322	PCA LED + Switch
1101	2422 128 03123	Swi 2P 2pos 30V
8306	3104 311 06691	Cable 10P/340/10P



2107	4822 124 12095	100μF 20% 16V
2120	3198 030 71090	10μF 20% 35V
2126	4822 126 14583	470nF 10% 16V 0805



3101	4822 051 30151	150Ω 5% 0.062W
3102	4822 117 13632	100kΩ 1% 0603 0.62W
3103	4822 051 30561	560Ω 5% 0.062W
3104	4822 117 13632	100kΩ 1% 0603 0.62W
3105	4822 051 30102	1kΩ 5% 0.062W
3106	4822 051 30151	150Ω 5% 0.062W
3107	4822 051 30471	47Ω 5% 0.062W
3108	4822 051 30103	10kΩ 5% 0.062W
3109	4822 051 30101	100Ω 5% 0.062W
3120	4822 051 30472	4.7Ω 5% 0.062W
3121	4822 051 30103	10kΩ 5% 0.062W
3122	4822 051 30332	3.3Ω 5% 0.062W
3123	4822 051 30332	3.3Ω 5% 0.062W
3124	4822 051 30102	1kΩ 5% 0.062W
3126	2322 702 60335	3.3MΩ 5% 0603
3127	2322 702 60335	3.3MΩ 5% 0603
4101	4822 051 30008	Jumper 0603
4107	4822 051 30008	Jumper 0603



5100	2422 549 43769	Bead 30Ω 100MHz
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6101	4822 130 11564	UDZ3.9B
6103	4822 130 83915	TLMV3100
6105	4822 130 11564	UDZ3.9B
6127	9322 140 63685	TEMD5000



7103	3198 010 42320	BC857BW
7105	3198 010 42320	BC857BW
7107	9322 178 03667	TSOP2136YA1
7120	5322 209 82941	LM358D

Top Control Panel [P]

Various

0053	3104 308 10551	TC assy knob R LCD 30"
0055	3104 308 10561	TC assy knob L LCD 30"
0057	3104 304 25831	TC frame LCD 30"
0058	3104 308 10571	TC assy knob M LCD 30"
0345	4822 267 10459	Connector 3p
1114	3104 328 29811	Top Control Assy
1701	2422 128 02778	Tact switch
1702	2422 128 02778	Tact switch
1703	2422 128 02778	Tact switch
1704	2422 128 02778	Tact switch
1705	2422 128 02778	Tact switch



3001	4822 051 20391	390Ω 5% 0.1W
3003	4822 117 13528	200Ω 1% 0.125W 0805
3005	4822 117 11951	2kΩ 1% 0.1W
3009	4822 117 11534	1.1kΩ 1% 0.1W
3011	4822 117 10845	620Ω 1% 0.1W
3999	4822 051 20471	470Ω 5% 0.1W
9001	4822 051 20008	Jumper 0805
9003	4822 051 20008	Jumper 0805
9005	4822 051 20008	Jumper 0805
9006	4822 051 20008	Jumper 0805

11. Revision List

Manual xxxx xxx xxxx.0

- First release.

Manual xxxx xxx xxxx.1

- Chapter: Technical Specifications, Connections, and Chassis Overview, some layout issues fixed.
- Chapter: Wiring Diagram, Block Diagrams and Overviews
 - Supply Lines Overview, layout issue fixed.
- Chapter: Spare Parts List:
 - Updated and completed.
 - Exploded view with mechanical parts added.